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WHY PATENTABLE SUBJECT MATTER MATTERS FOR SOFTWARE[†]

BRIAN J. LOVE[∗]

It's not hard to see why many think software patents are a scourage. Studies suggest that they encourage very little innovation,[1] impose a great deal of cost on innocent technology companies,[2] and are almost singlehandedly responsible for the existence of patent trolls.[3] After half a decade of appellate litigation aimed at curtailing the patentability of code-based inventions, however, foes of software patents have little to show for their efforts beyond a largely meaningless Supreme Court opinion[4] and a

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[1] *See, e.g.*, Stuart J.H. Graham et al., *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 BERKELEY TECH. L.J. 1255, 1262, 1290 (2010) (finding in a survey of start-up companies that (i) first mover advantage, not patent protection, was the most "important" means to "capture competitive advantage" in the software industry, and (ii) that the majority of start-up companies in the software industry hold no patents at all). Consider also that the software industry flourished in the late 1980s and early 1990s despite the fact that software was not clearly patentable until later in the decade. *See, e.g.*, Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1618-19 (2003).

[2] In an event study of accused infringers' stock prices following suit, Bessen et al. found that the average NPE suit cost accused infringers $122 million. James Bessen et al., *The Private and Social Costs of Patent Trolls*, at *15, Tbl. 2 (Boston University School of Law Working Paper No. 11-45, at *15 (Sep. 19, 2011). Over the last twenty years, the aggregate wealth lost to NPE suits is approximately $500 billion. *Id.* at *16. Also, allegations of copying are quite rare in patent suits, particularly those enforcing high-tech patents. *See infra* note 32.

[3] In a recent empirical study, I found that roughly roughly 65% of NPE patent assertions were brought to enforce a software patent and 80% were brought to enforce a high-tech patent. Brian J. Love, *An Empirical Study of Patent Litigation Timing: Could a Patent Term Reduction Decimate Trolls without Harming Innovators?*, at *39 (working paper). Similarly, Bessen et al. found that 62% of patents litigated by NPEs between 1990 and 2010 were "software patents" and 75% covered "computer and communications technology." Bessen et al., *supra*, at *12.

[4] *Bilski v. Kappos*, 130 S. Ct. 3218 (2010) (rejecting the Federal Circuit's "machine or transformation test" as the sole test for abstractness, but failing to provide an alternative test); *see, e.g.*, Larry Downes, Bilski*: One Last Tilt at the IP Windmills*, The Technology Liberation Front (June 29, 2010), *at* http://techliberation.com/2010/06/29/bilski-one-last-tilt-at-the-ip-windmills/ ("[*Bilski*] basically did nothing to change patent law or to settle enormous and mushrooming uncertainties, both for business methods and, more generally, for software applications.").

slew of inconsistent rulings at the Federal Circuit.[5]

But, all may not be lost just yet. Summarily vacated and remanded by the Supreme Court on May 21, *Ultramercial v. Hulu*[6] may be the high tech industry's last best chance to convince the Federal Circuit to meaningfully limit the scope of patentable subject matter for software business methods. By remanding *Ultramercial*, a case concerning web-based advertising technology, for reconsideration in light of its recent opinion in *Mayo v. Prometheus*,[7] the Supreme Court tipped its hand to the possibility that the reasoning it used to deny patent rights for a medical diagnostic test in *Mayo* may have broad application beyond the sphere of medicine and biotechnology—a glimmer of hope for those hoping to see the thicket of software patents trimmed, if not yanked out by the roots.

Rather than opine on the boundary of patentability for software or propose a new test based on dicta from *Mayo*, both issues about which much ink has been and will be spilled by other scholars,[8] this Essay takes a step back and asks: why are we fighting about patentable subject matter for software in the first place? The answer is straightforward, but it is one that courts applying—and commentators arguing for—broad subject matter rules seem to have forgotten.

Patentable subject matter matters not because it is the ideal solution to the ills of software patents—it isn't[9]—or easy to apply—it isn't that either.[10] Rather, patentable subject matter matters because it is virtually the only defensive mechanism left for repeat victims of software patent hold-up.[11]

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[5] *Compare Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011), *vacated & rem'd* No. 11-962, – S.Ct – (May 21, 2012) (finding the claims at issue not abstract because they included an "over the Internet" limitation and, thus, "likely require intricate and complex computer programming") *with* DealerTrack, Inc. v. Huber, 674 F.3d 1315, 1333 (Fed. Cir. 2012) (finding the claims at issue too abstract, despite the inclusion of a "computer-aided" limitation, because they are "silent as to how a computer aids the method, the extent to which a computer aids the method, or the significance of the computer to the performance of the method").

[6] *Ultramercial*, 657 F.3d 1323, *vacated & rem'd* No. 11-962, – S.Ct – (May 21, 2012).

[7] 132 S.Ct. 1289 (2012).

[8] *See, e.g.*, Mark A. Lemley, et al., *Life After* Bilski, 63 STAN. L. REV. 1315 (2011); Bernard Chao, *Moderating* Mayo, 107 NW. U. L. REV. (forthcoming 2012).

[9] *See, e.g.*, Dennis Crouch & Robert P. Merges, *Operating Efficiently Post-*Bilski *by Ordering Patent Doctrine Decisionmaking*, 25 BERKELEY TECH. L.J. 1673, 1691 (2011) (arguing that regularly applying section 101 is inefficient because doing so, inter alia, increases "the total cost of deciding validity issues" and decreases "respect for patent tribunals").

[10] *See, e.g.*, MySpace, Inc. v. GraphOn Corp., 672 F.3d 1250, 1260 (Fed. Cir. 2012) (referring to section 101 as a "swamp of verbiage" and "murky morass").

[11] HP, Apple, Samsung, AT&T, Sony, Dell, Motorola, and Amazon were each sued by NPEs thirty or more times in 2011 alone. PatentFreedom, Most Pursued Companies, at https://www.patentfreedom.com/about-npes/pursued/. Nine more technology companies were sued twenty or more times. *Id.* For more on the causes and effects of "patent holdup," see Mark A. Lemley & Carl Shapiro, *Patent Holdup and Royalty Stacking*, 85 TEX. L. REV. 1991 (2007). To be clear, Ultramercial is not a non-practicing entity; it sells web-based advertising services and did business

2

I. Section 101 is a frustrating "murky morass"

Increasingly, courts and commentators weary from years of arguing about the scope of patentable subject matter for software patents seem ready to throw in the towel. Rather than continue efforts to craft a test for determining when a software invention graduates from an "abstract idea" or mere algorithm into a patentable invention, some now dismiss arguments for excluding claims under section 101[12] as attacks more properly made under sections 102,[13] 103,[14] and 112[15].[16]

Chief Judge Rader's opinion in *Ultramercial*, the very case the Federal Circuit must now reconsider, is a prime example of this shift. The case

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with WildTangent prior to filing suit. Ultramercial LLC & Ultramercial, Inc., Br. in Opp. to Pet. Cert.,WildTangent, Inc. v. Ultramercial LLC, No. 11-962 (April 30, 2012).

[12] 35 U.S.C. § 101 (defining patent-eligible subject matter as "any new and useful process, machine, manufacture, or composition of matter"). As interpreted by courts, section 101 excludes from the scope of patentable subject matter "laws of nature, physical phenomena, and abstract ideas." *See* Bilski v. Kappos, 130 S. Ct. 3218, 3225 (2010) (quoting Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980)).

[13] 35 U.S.C. § 102 (2006) (denying patent rights for inventions that lack novelty). The America Invents Act amends 35 U.S.C. § 102 to establish a first-to-file patent system. *See* Leahy-Smith America Invents Act, Pub. L. No. 112-29, § 3(b), 125 Stat. 284, 285–87 (2011). This provision will go into effect eighteen months after September 16, 2011, the date the Act was enacted. *See* § 3(n)(1), 125 Stat. at 293.

[14] 35 U.S.C. § 103 (denying patent rights for inventions that "as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art").

[15] 35 U.S.C. § 112 (denying patent rights for inventions that lack "a written description of the invention . . . in such full, clear, concise, and exact terms as to enable any person skilled in the art. . . to make and use the same").

[16] *See Ultramercial, LLC v. Hulu, LLC*, 657 F.3d at 1326-29 (described in detail *infra*); Research Corp. Techs., Inc. v. Microsoft Corp., 627 F.3d 859, 868 (Fed. Cir. 2010) (holding that "[t]he section 101 patent-eligibility inquiry is only a threshold test" and "that section 101 eligibility should not become a substitute for a patentability analysis related to prior art, adequate disclosure, or the other conditions" of patentability); *see also* MySpace, Inc. v. GraphOn Corp., 672 F.3d 1250, 1260 (Fed. Cir. 2012) (holding that courts may require litigants to address a patent's validity under sections 102, 103, and 112 before reaching section 101 because doing so would avoid "the murky morass that is § 101 jurisprudence" and "would make patent litigation more efficient, conserve judicial resources, and bring a degree of certainty to the interests of both patentees and their competitors in the marketplace"). This line of Federal Circuit precedent appears to derive from one phrase in Justice Stevens' concurrence in *Bilski*. 130 S. Ct. 3218, 3238 (2010) (Stevens, J., concurring) (noting that in crafting a test for abstractness there is "a risk of merely . . . seeing common attributes that track the familiar issues of novelty and obviousness that arise under other sections of the statute but are not relevant to § 101" (internal quotation marks omitted)).

Some scholars agree. *See* Michael Risch, *Everything is Patentable*, 75 TENN. L. REV. 591 (2008) (arguing that section 101 should be adandoned altogether as a check on patentability); Kristen Osenga, *Ants, Elephant Guns, and Statutory Subject Matter*, 39 ARIZ. ST. L.J. 1087, 1087 (2007) (arguing that rejecting software patents under section 101 is like "trying to kill an ant with an elephant gun" and in really a"mere[] prox[y] for . . . other statutory patentability requirements"). *Cf.* Crouch & Merges, *supra* note 9, at 1674 (arguing that patents' validity should be subject first to sections 102, 103, and 112, and only as a last resort to section 101, in order to "minimiz[e] the cost and confusion that accompany a review of patents for § 101 subject-matter eligibility").

involves a patent "disclos[ing] a method for allowing Internet users to view copyrighted material free of charge in exchange for watching certain advertisements."[17] Reversing a decision by the Central District of Californa holding the claimed invention too abstract for patent protection,[18] the Federal Circuit downplayed patentable subject matter as nothing more than a "coarse eligibility filter"—a simple, easily-met "threshold check."[19] Indeed, in concluding that the district court erred, the Federal Circuit did not apply the "machine or transformation test," or *any* test for that matter, to probe the patent's abstract nature. Rather, the court suggested the invention's patentworthyness under section 101 was readily apparent because the patent claims at issue indirectly "invoke[] computers and applications of computer technology" that "likely," but certainly not expressly, "require intricate and complex computer programming" and an "extensive computer interface" to implement.[20]

Though not necessarily unsympathetic to the accused infringers' arguments that the "broadly claimed method in the . . . patent does not specify a particular mechanism" for carrying out the claimed functionality, the court replied that "[t]his breadth and lack of specificity does not render the claimed subject matter impermissibly abstract."[21] Instead, the court stressed that it is the "substantive conditions of patentability"[22]—namely, "novelty, nonobviousness, and adequate disclosure"[23]—upon which "claim patentability ultimately depends."[24] No fewer than five times in six pages, the court distinguished section 101 and patentable subject matter from "the substantive criteria set forth in § 102, § 103, and § 112."[25]

The implication seems clear: accused infringers relying on section 101 to invalidate a sweepingly broad software patent are barking up the wrong tree. Rather than arguing such patents are outside the bounds of patentable subject matter, the court implores defendants instead to rely on the remaining checks on patentability and, in the court's words, bring

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[17] *Ultramercial, LLC v. Hulu, LLC*, No. 09-CV-6918, 2010 WL 3360098, at *1 (C.D. Cal. Aug. 13, 2010), *rev'd* 657 F.3d 1323 (Fed. Cir. 2011).
[18] The Central District of California dismissed Ultramercial's infringement claims on the grounds that its patent covered an "abstract idea" and thus failed to qualify as patentable subject matter under the Supreme Court's then-brand new opinion in *Bilski v. Kappos*, 130 S. Ct. 3218 (2010). Applying the "machine or transformation test," the district court ruled that Ultramercial's patent recited neither a machine nor a transformation because "the Internet is not a machine" and "the mere transfer of data from one memory disk on one computer to another memory space in a second computer is not 'transformation of article.'" 2010 WL 3360098, at *4-5.
[19] 657 F.3d at 1326.
[20] *Id.* at 1328.
[21] *Id.* at 1329.
[22] *Id.* at 1326 (quoting Classen Immunotherapies, Inc. v. Biogen IDEC, 659 F.3d 1057, 1064 (Fed.Cir.2011)).
[23] *Id.* at 1326.
[24] *Id.*
[25] *Id.* at 1324-30.

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"challenges that the claimed invention does not advance technology (novelty), does not advance technology sufficiently to warrant patent protection (obviousness), or does not sufficiently enable, describe, and disclose the limits of the invention (adequate disclosure)."[26]

Sounds reasonable, right? Claim overbreadth is at the core of all four doctrines. Broad claims risk overlapping abstract ideas, just like they risk overlapping old ideas or new ideas the patentee did not foresee at the time of filing.[27] If the boundary between patentable software and abstraction is hard to define and hard for courts to apply, why bother at all when accused infringers have, as the Federal Circuit puts it, other "powerful tools to weed out" deficient patents?[28]

II. But sections 102, 103, and 112 aren't adequate alternatives

The problem, and what the court and some commentators fail to acknowledge, is that companies accused of infringing software patents have resorted to section 101 challenges precisely because the traditional checks on patentability found in 102, 103, and 112 (those "powerful tools" the court mentioned) have proven woefully ineffective at screening overbroad software patents from the pool.

As safeguards against overbroad claims, the novelty, nonobviousness, and enablement requirements are, among all arts, least effective with respect to software. Take enablement—the patentability requirement tasked with ensuring that prospective patentees disclosure enough to the public to allow those working in the art to make and use the invention. In the context of software, enablement is all but trivial because, as a matter of law, a person with ordinary skill in the art of software is a capable computer programmer.[29] Thus, quixotically, the "inventor" of a software-based invention never has to code anything to get a patent.[30] In fact, he doesn't even have to know how to code himself.[31] He can simply describe

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[26] *Id.* at 1328.

[27] *See, e.g.*, Crouch & Merges, *supra* note 9, at 1674 ("[T]he policy underpinnings of various requirements overlap in complex ways, so that in reality patentability doctrine does not test for a series of discrete and independent qualities that are distinct from and mutually exclusive of each other.").

[28] Research Corp. Techs., Inc. v. Microsoft Corp., 627 F.3d 859, 869 (Fed. Cir. 2010).

[29] Fonar Corp. v. Gen. Elec. Co., 107 F.3d 1543, 1549 (Fed. Cir. 1997) ("[W]riting code for . . . software is within the skill of the art . . . ."); AllVoice Computing PLC v. Nuance Commc'ns, Inc., 504 F.3d 1236, 1245 (Fed. Cir. 2007) ("In software cases, . . . algorithms in the specification need only disclose adequate defining structure to render the bounds of the claim understandable to one of ordinary skill in the art.").

[30] Under the doctrine of "constructive reduction to practice," a purported inventor can apply for a patent without first building a working model. Hoffman-La Roche, Inc. v. Promega Corp., 323 F.3d 1354, 1377 (Fed. Cir. 2003). Moreover, software patent applicants need not submit source code to the PTO to satisfy the best mode requirement. *Fonar*, 107 F.3d at 1549.

[31] *See* Diamond Rubber Co. v. Consol. Rubber Tire Co., 220 U.S. 428, 435–36 (1911) ("[H]ow can it

in broad terms what he might have coded and leave it up to the public—namely unwary independent inventors—to do the actual work.[32]

The novelty and nonobviousness requirements are also rather ineffective at derailing questionable software patent applications because applying these doctrines requires the identification of specific pieces of prior-art. In fact, blackletter patent law in this area is so tied to analysis of particular prior art references that the Federal Circuit actually forbids district judges from relying on anything else, including simple common sense. Just last month, the Federal Circuit drove home the point by reversing a judge who "clearly erred" by using a "common sense approach" when considering obviousness.[33]

The prohibition on common sense aside, the fact that novelty and nonobviousness determination must rest on particular pieces of prior art is a problem in the software world predominantly because it is so difficult to locate software prior art. The PTO is ill equipped to locate prior art in fields that evolve quickly and fields that fall outside established, organized research communities.[34] Software, unfortunately, is both. PTO examiners most often locate prior art in databases of issued patents. But, there will be few if any patents issued in fields like software, where products churn faster than patents issue.[35] Worse, when an invention relates to an area that falls outside the interests of the established research community—like software, finance, and e-commerce do—what little prior art exists is unlikely to have ever been published in printed form at all.[36] Given the

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take from [an inventor's] merit that he may not know all of the forces which he has brought into operation? It is certainly not necessary that he understand or be able to state the scientific principles underlying his invention . . . .").

[32] Allegations of copying are rare in patent litigation, especially in cases involving high-tech patents. *See* Christopher A. Cotropia & Mark A. Lemley, *Copying in Patent Law*, 87 N.C. L. REV. 1421, 1424 (2009).

[33] Mintz v. Dietz & Watson, Inc., No. 2010-1341, 2012 WL 1940157, at *8 (Fed. Cir. May 30, 2012).

[34] Julie E. Cohen & Mark A. Lemley, *Patent Scope and Innovation in the Software Industry*, 89 CALIF. L. REV. 1, 43 (2001) ("The patent system presumes a finite, comprehensively indexed technical literature and relies on individual examiners to . . . search the relevant subliteratures."); Note, *Estopping the Madness at the PTO: Improving Patent Administration Through Prosecution History Estoppel*, 116 HARV. L. REV. 2164, 2171 (2003) ("Although emerging technologies, by definition, contain less prior art, the PTO often misses entirely the prior art that does exist . . . . because it lacks the resources or the expertise to keep up in a rapidly changing field.").

[35] Computing power doubles roughly every two years, Gordon E. Moore, *Cramming More Components Onto Integrated Circuits*, ELECTRONICS, Apr. 19, 1965, at 114, 115 (predicting this trend, now referred to as "Moore's Law"), while patent applications spend an average of about three years at the PTO before issuing as patents, *see* John R. Allison & Mark A. Lemley, *The Growing Complexity of the United States Patent System*, 82 B.U. L. REV. 77, 98 (2002). *See also Estopping the Madness*, *supra*, at 2171 ("For emerging technologies, a search through a database of existing patents will yield very little prior art.").

[36] *Estopping the Madness*, *supra*, at 2171 ("[S]oftware innovations . . . may be documented only via developer specifications or online FAQs. Frequently, the source code itself is never released at all.");

diffuse nature of prior art in these fields and the time pressure examiners feel to slog through an increasing backlog of applications,[37] PTO examiners have little shot at accurately assessing the novelty and nonobviousness of software patent applications, and thus allow many overbroad software applications to issue as patents.

Moreover, the realities of patent litigation ensure that these mistakes generally go uncorrected in court when overbroad software patents are asserted. Though it is true that, once a patent is litigated, accused infringers can pay for extensive prior art searches to locate art the PTO could not, much software prior art is never memorialized in a permanent or even semi-permanent way and may no longer be available years after the patent issues. Further, even when new art is located, the Patent Act requires courts and juries to assume issued patents are valid.[38] As interpreted by courts, this means that post-issue invalidity must be shown by clear and convincing evidence, making the the bar for invalidity ex post far higher than it was ex ante at the PTO.[39] The cumulative effect is a double shield against invalidity: PTO examiners have wide discretion to deny rights but lack the ability to find strong prior art; judges and juries have better art but must subject it to a far higher level of scrutiny.[40]

Finally, all of this is compounded by the fact that some software patentees are satisfied simply by the ability to file a complaint, regardless of their patent's ability to withstand motions practice or trial. Because patent litigation defense costs are extremely high, patentees can often negotiate sizeable settlements simply by offering to settle for less than the

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Margo A. Bagley, *Internet Business Model Patents:Obvious by Analogy*, 7 MICH. TELECOMM. & TECH. L. REV. 253, 279-80 (2000) ("Commercial business models of the type that are being applied to the Internet, are likely, if anything, to be less well documented than financial methods. There simply is no real scientific literature on business models.").

[37] On average, a patent examiner will spend just 18 hours total on each application he reviews. *See* Mark A. Lemley, *Rational Ignorance at the Patent Office*, 95 Nw. U. L. REV. 1495, 1500 (2001). At the close of 2009, the PTO employed just over 6,000 examiners and faced a backlog of more than 700,000 applications awaiting their first office action. U.S. Patent & Trademark Office, Patent Inventory Statistics--FY09 (2009), *at* http://www.uspto.gov/patents/stats/appbacklog.jsp.

[38] 35 U.S.C. § 282 ("[A] patent shall be presumed valid" and "[t]he burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity"); Microsoft Corp. v. i4i Ltd. Partnership, 131 S.Ct. 2238 (2011) (reaffirming that "§ 282 requires an invalidity defense to be proved by clear and convincing evidence").

[39] *See* Doug Lichtman & Mark Lemley, *Rethinking Patent Law's Presumption of Validity*, 60 STAN. L. REV. 45, 51–52, 61 (2007).

[40] *See* Hon. William Alsup, *Memo to Congress: A District Judge's Proposal for Patent Reform: Revisiting the Clear and Convincing Standard and Calibratiung Deference to the Strength of the Examination*, 24 BERKELEY TECH. L.J. 1647, 1648 (2009) ("This presumption of validity applies equally to all patents—even those that are almost certainly invalid. This is . . . often an unfair advantage, given the ease with which applicants and their agents can sneak undeserving claims through the PTO. Because of the burnish of this presumption, patentees can use a weak, arguably invalid patent, to force an accused infringer through years of litigation.").

amount it would cost the accused infringer in attorneys' fees to fight through discovery and win on a motion or at trial.[41] Companies accused of infringing software patents actually do pretty well in front of juries (which, unlike district judges, can use common sense when deciding whether to invalidate a patent—or, rather, can do so without leaving behind a paper trail that could be used as a basis for appeal).[42] However, this fact is of little consolation to defendants in many patent suits, particularly suits brought by established non-practicing entities who own patents so broad they can sue dozens of companies, if not an entire industry, without risking sanctions. A good shot at invalidating a patent at trial is largely irrelevant if it costs $2 million to get before a jury and the patentee is willing to settle for $500,000.

III. That's why section 101 matters

What repeat victims of hold-up crave is a mechanism that (1) can keep as many broad software patents as possible from leaving the PTO in the first place; and (2) they can use to attack broad software patents that slip through the cracks before trial with an early motion. Because it is a purely philosophical endeavor not tied to prior art or a factual inquiry, a patentable subject matter challenge fits the bill. This is why patentable subject matter matters to those in the high tech industry.

It was only after finding themselves with nowhere else to turn that accused infringers gradually began to resort to section 101 for protection. Though software first clearly became patentable in 1998,[43] challenges on the basis of patentable subject matter were largely unheard of prior to 2007, when *Bilski* first landed at the Federal Circuit.[44] In short,

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[41] *See* David L. Schwartz, *The Rise of Contingent Fee Representation in Patent Litigation*, ALABAMA L. REV., at *37-38 (forthcoming 2012) (noting NPE patents that are "enforced against an entire industry, or alternatively against a slew of defendants in a single lawsuit" with the strategy to "propose settlement amounts which are lower, often far lower, than the amount which it will cost an accused infringer to defend itself," often "in the range of $100,000 or $250,000, even though the cost of litigating the case for an accused infringer would be close to one million dollars per year").

[42] *See* John R. Allison, Mark A. Lemley & Joshua Walker, *Patent Quality and Settlement Among Repeat Patent Litigants*, 99 GEO. L.J. 677, 680, 692, 695–96 (2011) (studying patents litigated eight or more times and finding that (1) suits enforcing such patents are successful only 10.7% of the time when litigated to a final resolution, (2) 63.5% of such patents are owned by non-practicing entities, and (3) 74.1% of such patents are software-related).

[43] State Street Bank & Trust v. Signature Financial Group, Inc., 149 F.3d 1368, 1373, 1375 (Fed. Cir. 1998) (eliminating the "business method exception" to patentable subject matter and holding that software is patentable provided it "constitutes a practical application of a mathematical algorithm, formula, or calculation" by "produc[ing]s 'a useful, concrete and tangible result'").

[44] Brian J. Love, *Interring the Pioneer Invention Doctrine*, 90 N.C. L. REV. 379, 399 n.83 (2012) (finding that "[p]arties (or amici) in just twelve appeals raised 35 U.S.C. § 101 as a defense between 2001 and the time *In re Bilski*, 545 F.3d 943 (2008), reached the Federal Circuit in early 2007"); Lemley, et al., *supra* note 8, at 1318 ("For a decade after 1998, patentable subject matter was

dissatisfied with enablement, novelty, and nonobviousness, the high tech industry eventually settled on patentable subject matter as the least bad option available.

If the Federal Circuit is tired of philosophizing about patentable subject matter, it has no one to blame but itself. It is precisely because three decades of case law have made the remaining checks on patentability so weak that courts, patentees, and accused infringers now find themselves working to draw a workable line in the sand between patentable software and abstract ideas.[45] For courts now to imply otherwise—i.e., that accused infringers rely on patentable subject matter when they have better options to pursue—suggests the onset of a surprisingly sudden case of institutional amnesia. And, perhaps, one that reflects more of a desire to avoid the tough job of charting the coastline of patentability than to promote innovation.

Courts that find patentable subject matter frustrating can do better. Short of giving section 101 a new set of teeth, tweaking the standards for novelty, nonobviousness, and enablement so that they acknowledge the realities of innovation in the software industry would be an excellent start.

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effectively a dead letter.").

[45] In fairness to the Federal Circuit, the Supreme Court has not been very helpful either. Like its opinion in *Bilski*, the Court's foray into obviousness jurisprudence in *KSR Int'l Co. v. Teleflex, Inc.* raised more questions than it answered. 550 U.S. 398 (2007) (rejecting the Federal Circuit's "teaching, suggestion, or motivation" test as the sole test for obviousness, but failing to propose an alternative).