
How *Prometheus* Has Upended Patent Eligibility: An Anatomy of *Alice Corporation Proprietary Limited v. CLS Bank International*

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The 2014 decision by the Supreme Court in *Alice Corporation Proprietary Ltd. v. CLS Bank International*, concerns the eligibility of a computer-related invention for a patent.¹ Ahead of that decision, the extent to which the Court's 2012 decision in *Mayo v. Prometheus*,² concerning the patent eligibility of a diagnostic method, would apply to a computer-related invention was a matter of conjecture. Although the statute determining eligibility for a patent, 35 U.S.C. § 101, specifies that an invention of "[a] process, machine, manufacture, or composition of matter" can be patented,³ the Court has injected three exceptions to these statutory categories: laws of nature, natural phenomena, and abstract ideas.⁴ At issue in *Alice* and in *Prometheus* is the scope of these exceptions.

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¹ *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2351–52 (2014).

² *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2012).

³ 35 U.S.C. § 101 (2012). An invention defined by claims in a patent or patent application is deemed "eligible" for a patent if it is within the scope of 35 U.S.C. § 101, which states that "[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." In other words, "eligibility" is a threshold condition for a patent, which, when satisfied, allows further consideration of whether the claims define subject matter that satisfies other requirements for a patent, such as novelty under 35 U.S.C. § 102, non-obviousness under 35 U.S.C. § 103, and sufficiency of the disclosure and clarity of the claims under 35 U.S.C. § 112.

⁴ See *Prometheus*, 132 S. Ct. at 1293.

This article focuses on the *Alice* decision by the Court, the decision below by the Federal Circuit, and the roots of the *Alice* decision in *Prometheus*. It concludes with a proposal for enactment of legislation that would remove these judicial exceptions and require adherence to the eligibility standards specified in the statute.⁵

The inventions in *Alice* and *Prometheus* concern two totally different technical fields. The patent claims⁶ in *Alice* relate to a computer-implemented trading platform for conducting financial transactions in which a third party settles obligations between a first and a second party so as to eliminate “counterparty” or “settlement” risk.⁷ The patent claims in *Prometheus* are directed to administering a thiopurine drug to a subject with a gastrointestinal disorder and determining the level of a specific metabolite in the subject, wherein a level below a first threshold indicates a need to increase drug dosage and wherein a level above a second threshold indicates a need to decrease drug dosage.⁸

In *Prometheus*, the Court asserted that the patent claims under consideration involved natural laws: “[t]he claims purport to apply natural laws describing the relationships between the concentration in the blood of certain thiopurine metabolites and the likelihood that the drug dosage will be ineffective or induce harmful side-effects.”⁹ In the view of the *Prometheus* Court, “[w]e must determine whether the claimed processes have transformed these unpatentable natural laws into patent-eligible applications of those laws. We conclude that they have not done so and that therefore the processes are not patentable.”¹⁰

In *Prometheus*, Justice Breyer, writing for a unanimous Court, staked out new ground by finding ineligible for a patent—because drawn to laws of nature—a diagnostic method that admittedly requires human intervention in administering a drug and in determining the level of a metabolite in the subject.¹¹ *Prometheus* cited with approval cases like *Gottschalk v. Benson*¹² (finding patent-ineligible a method of converting

⁵ 35 U.S.C. § 101.

⁶ The claims in a patent define the inventive subject matter covered by the patent. 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.”).

⁷ See *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1274 (Fed. Cir. 2013) (Lourie J., concurring), *aff’d en banc*, 134 S. Ct. 2347 (2014) (describing the claimed subject matter).

⁸ *Prometheus*, 132 S. Ct. at 1295.

⁹ *Id.* at 1294.

¹⁰ *Id.*

¹¹ *Id.* at 1292.

¹² See *id.* at 1293–94, 1301–02. See generally *Gottschalk v. Benson*, 409 U.S. 63 (1972).

binary coded decimal numbers to pure binary numbers in a digital computer system) and *Parker v. Flook*¹³ (finding patent-ineligible a computer-implemented method of updating alarm limits in a process for catalytic chemical conversion of hydrocarbons)—cases which many felt had been overruled silently by *Diamond v. Diehr*¹⁴ (method of manufacturing molded articles is not precluded from being patented “simply because it uses a mathematical formula, computer program, or digital computer”). *Prometheus* also cited with approval *Funk Brothers Seed Co. v. Kalo Inoculant Co.*¹⁵ (finding patent-ineligible claims to a mixture of bacterial strains developed so as to avoid inhibiting each other’s ability to fix nitrogen), which many felt had been overruled silently by *Diamond v. Chakrabarty*¹⁶ (finding patent-eligible a human-made, genetically engineered bacterium, capable of breaking down multiple components of crude oil).

The resuscitation by *Prometheus* of the nearly dead-letter decisions of *Gottschalk*, *Parker*, and *Funk Brothers Seed Co.* in combination with its unprecedented invalidation of diagnostic method claims on the ground of patent-ineligibility, unquestionably heralded a retrenchment in what subject matter would be deemed patent-eligible. However, the scope of that retrenchment was uncertain immediately after *Prometheus*.

The Federal Circuit’s handling of *CLS Bank International v. Alice Corporation Proprietary Limited*,¹⁷ which was later reviewed by the Court in *Alice*, reflected the uncertainty created by *Prometheus*. The Federal Circuit, sitting *en banc*, with an evenly divided vote, upheld the patent invalidity determination of the trial court¹⁸ and thus failed to provide a determination having precedential effect.¹⁹

The Federal Circuit decision in *CLS Bank* produced, in addition to the single paragraph *per curiam* announcement of the decision, opinions by Judge Lourie (for himself and Judges Dyk, Prost, Reyna, and Wallach), Judge Rader (for himself and Judge Moore, and in some aspects, for Judges Linn and O’Malley), Judge Moore (for herself and Judge Rader, and, in some aspects, for Judges Linn and O’Malley), Judges Linn and O’Malley,

¹³ See *Prometheus*, 132 S. Ct. at 1293–94, 1298–99, 1301–03. See generally *Parker v. Flook*, 437 U.S. 584 (1978).

¹⁴ See 450 U.S. 175, 175–76 (1981).

¹⁵ See *Prometheus*, 132 S. Ct. at 1293–94. See generally *Funk Bros. Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127 (1948).

¹⁶ See 447 U.S. 303, 305–11 (1980).

¹⁷ *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269 (Fed. Cir. 2013) (en banc).

¹⁸ *Id.* at 1273 (one-paragraph *per curiam* decision).

¹⁹ “[N]othing said today beyond our judgment has the weight of precedent.” *Id.* at 1292 n.1 (opinion of Rader, J.).

Judge Newman, and Judge Rader (again). Each one of these opinions stakes out a different view of the implications of *Prometheus* on patent eligibility, and each of these opinions, for different reasons, is informative of the meaning of *Prometheus*.

The core question addressed by the Federal Circuit in *CLS Bank* is the eligibility of a computer-related invention for a patent.²⁰ We begin first with the opinion of Judge Lourie, who characterizes the patents as relating “to a computerized trading platform used for conducting financial transactions in which a third party settles obligations between a first and a second party so as to eliminate ‘counterparty’ or ‘settlement’ risk.”²¹ The “settlement” risk is that the counterparty will fail to perform and thus deprive a party of the benefit of the bargain in the transaction.²² “As disclosed in Alice’s patents, a trusted third party can be used to verify each party’s ability to perform before actually exchanging either of the parties’ agreed-upon obligations.”²³

In evaluating patent eligibility, Judge Lourie posits an “integrated” approach to 35 U.S.C. § 101.²⁴ He characterizes the analysis under section 101 thus:

If the invention falls within one of the statutory categories [of section 101], we must then determine whether any of the three judicial exceptions nonetheless bars such a claim—is the claim drawn to a patent-ineligible law of nature, natural phenomenon, or abstract idea? If so, the claim is not patent eligible. Only claims that pass both inquiries satisfy § 101.²⁵

Judge Lourie aptly points out that identifying a judicial exception to patent eligibility is not easy:

While simple enough to state, the patent-eligibility test has proven quite difficult to apply. The difficulty lies in consistently and predictably differentiating between, on the one hand, claims that would tie up laws of nature, natural phenomena, or abstract ideas, and, on the other, claims that merely “embody, use, reflect, rest upon, or apply” those fundamental tools.²⁶

Judge Lourie sought to articulate an approach to the eligibility determination that would be predictable, so as to provide guidance to those using the patent system: “[w]hat is needed is a consistent, cohesive,

²⁰ *Id.* at 1273.

²¹ *Id.* at 1274.

²² *Id.*

²³ *CLS Bank*, 717 F.3d at 1274.

²⁴ *Id.* at 1280.

²⁵ *Id.* at 1277.

²⁶ *Id.* (quoting *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2012)).

and accessible approach to the § 101 analysis—a framework that will provide guidance and predictability for patent applicants and examiners, litigants, and the courts.”²⁷ To arrive at his approach to section 101, Judge Lourie analyzed *Gottschalk*,²⁸ *Parker*,²⁹ *Diehr*,³⁰ *Bilski*,³¹ and *Prometheus*.³²

The integrated approach posited by Judge Lourie involves a series of tests. “The first question is whether the claimed invention fits within one of the four statutory classes set out in § 101. Assuming that condition is met, the analysis turns to the judicial exceptions to subject-matter eligibility.”³³ Next, one determines “whether the claim raises § 101 abstractness concerns.”³⁴ “Does the claim pose any risk of preempting an abstract idea? In most cases, the answer plainly will be no.”³⁵ If, however, a patent eligibility question is deemed to be posed, then the analysis proceeds by seeking “a fundamental concept” that is involved:

[I]t is important at the outset to identify and define whatever fundamental concept appears wrapped up in the claim so that the subsequent analytical steps can proceed on a consistent footing. With the pertinent abstract idea identified, the balance of the claim can be evaluated to determine whether it contains additional substantive limitations that narrow, confine, or otherwise tie down the claim so that, in practical terms, it does not cover the full abstract idea itself.³⁶

In that respect, the requirement of “additional substantive limitations,” according to Judge Lourie, corresponds to what the Supreme Court has called the “inventive concept,” namely “a genuine human contribution to the claimed subject matter.”³⁷ According to Judge Lourie, an abstract idea cannot be invented but only discovered, and the “inventive concept” must be “a product of human ingenuity.”³⁸ Moreover, “[l]imitations that represent a human contribution but are merely tangential, routine, well-

²⁷ *Id.*

²⁸ *Id.*

²⁹ *CLS Bank*, 717 F.3d at 1278.

³⁰ *Id.* at 1279.

³¹ *Id.* (citing *Bilski v. Kappos*, 561 U.S. 593 (2010)) (“claims to processes for participants in energy commodities markets to hedge against the risk of price changes” held patent-ineligible because directed to an abstract idea).

³² *Id.* at 1279.

³³ *Id.* at 1282.

³⁴ *Id.*

³⁵ *CLS Bank*, 717 F.3d at 1282.

³⁶ *Id.*

³⁷ *Id.* at 1282–83 (citing *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1294 (2012), which in turn cites *Parker v. Flook*, 437 U.S. 584, 594 (1978)).

³⁸ *Id.* (citing *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980)).

understood, or conventional, or in practice fail to narrow the claim relative to the fundamental principle therein, cannot confer patent eligibility.”³⁹

After articulating this form of analysis for patent eligibility, Judge Lourie turns to the patent claims. Three types of patent claims were presented and discussed: method claims, storage medium claims, and system claims. As a representative method claim, Judge Lourie discussed claim 33 of United States patent 5,970,479, which reads as follows:

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, the method comprising the steps of:

(a) creating a shadow credit record and a shadow debit record for each stakeholder party to be held independently by a supervisory institution from the exchange institutions;

(b) obtaining from each exchange institution a start-of-day balance for each shadow credit record and shadow debit record;

(c) for every transaction resulting in an exchange obligation, the supervisory institution adjusting each respective party's shadow credit record or shadow debit record, allowing only these transactions that do not result in the value of the shadow debit record being less than the value of the shadow credit record at any time, each said adjustment taking place in chronological order; and

(d) at the end-of-day, the supervisory institution instructing ones of the exchange institutions to exchange credits or debits to the credit record and debit record of the respective parties in accordance with the adjustments of the said permitted transactions, the credits and debits being irrevocable, time invariant obligations placed on the exchange institutions.⁴⁰

Claim 33 is notable for failing to recite explicitly the presence of a computer or computer component. In the District Court, however, “the

³⁹ *Id.* at 1283. In attempting to provide clarity greater than provided by the Supreme Court in the *Prometheus* decision, 132 S. Ct. at 1298, from which he has inferred the test, Judge Lourie argues that:

We do not therefore understand that language to be confused with novelty or nonobviousness analyses, which consider whether particular steps or physical components together constitute a new or nonobvious invention. Analyzing patent eligibility, in contrast, considers whether steps combined with a natural law or abstract idea are so insignificant, conventional, or routine as to yield a claim that effectively covers the natural law or abstract idea itself.

CLS Bank, 717 F.3d at 1284.

⁴⁰ *Id.* at 1285.

parties had stipulated that Alice's claims should all be interpreted to require a computer including at least 'a processor and memory.'"⁴¹

After deciding that claim 33 is directed to a "process" in accordance with section 101, Judge Lourie concludes that "[t]he methods claimed here draw on the abstract idea of reducing settlement risk by effecting trades through a third-party intermediary (here, the supervisory institution) empowered to verify that both parties can fulfill their obligations before allowing the exchange—i.e., a form of escrow."⁴² According to Judge Lourie, "Standing alone, that abstract idea is not patent-eligible subject matter."⁴³ The question, then, in the mind of Judge Lourie, is whether the claim adds "significantly more" than is in the abstract idea.⁴⁴

While recognizing that the parties have conceded that the claimed method is carried out using a computer, Judge Lourie concludes that the claim fails to provide "significantly more" than is in the abstract idea:

At its most basic, a computer is just a calculator capable of performing mental steps faster than a human could. Unless the claims require a computer to perform operations that are not merely accelerated calculations, a computer does not itself confer patent eligibility. In short, the requirement for computer participation in these claims fails to supply an "inventive concept" that represents a nontrivial, nonconventional human contribution or materially narrows the claims relative to the abstract idea they embrace.⁴⁵

Consequently, the method claims fail to recite subject matter eligible for a patent.⁴⁶ According to Judge Lourie, the method claims here are similar to those examined in *Bilski v. Kappos* and "adding generic computer functions to facilitate performance provides no substantial limitation and therefore is not 'enough' to satisfy § 101."⁴⁷ As in *Bilski*, "upholding Alice's claims to methods of financial intermediation 'would pre-empt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.'"⁴⁸

Next, Judge Lourie turned to the storage medium claims. Specifically, he considered claim 39 of United States patent 7,725,375, which reads as follows:

⁴¹ *Id.* at 1275.

⁴² *Id.* at 1286.

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ *CLS Bank*, 717 F.3d at 1286.

⁴⁶ *Id.* at 1287.

⁴⁷ *Id.*

⁴⁸ *Id.*

39. A computer program product comprising a computer readable storage medium having computer readable program code embodied in the medium for use by a party to exchange an obligation between a first party and a second party, the computer program product comprising:

program code for causing a computer to send a transaction from said first party relating to an exchange obligation arising from a currency exchange transaction between said first party and said second party; and

program code for causing a computer to allow viewing of information relating to processing, by a supervisory institution, of said exchange obligation, wherein said processing includes (1) maintaining information about a first account for the first party, independent from a second account maintained by a first exchange institution, and information about a third account for the second party, independent from a fourth account maintained by a second exchange institution; (2) electronically adjusting said first account and said third account, in order to effect an exchange obligation arising from said transaction between said first party and said second party, after ensuring that said first party and/or said second party have adequate value in said first account and/or said third account, respectively; and (3) generating an instruction to said first exchange institution and/or said second exchange institution to adjust said second account and/or said fourth account in accordance with the adjustment of said first account and/or said third account, wherein said instruction being an irrevocable, time invariant obligation placed on said first exchange institution and/or said second exchange institution.⁴⁹

This claim specifically recites a computer. Of this feature, Judge Lourie comments:

[T]he claim term “computer readable storage medium” is stated in broad and functional terms—incidental to the claim—and every substantive limitation presented in the body of the claim (as well as in dependent claims 40 and 41) pertains to the method steps of the program code “embodied in the medium.” Therefore, claim 39 is not “truly drawn to a specific computer readable medium, rather than to the underlying method” of reducing settlement risk using a third-party intermediary.⁵⁰

Accordingly, Judge Lourie would rule that the storage medium claims fail to surmount the patent eligibility criteria for the same reasons as the method claims.⁵¹

⁴⁹ *Id.* at 1287–88.

⁵⁰ *Id.* at 1288 (quoting *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1374–75 (Fed. Cir. 2011)).

⁵¹ *CLS Bank*, 717 F.3d at 1288.

Finally, Judge Lourie turns to the system claims and considers claim 1 of United States patent 7,149,720, which reads as follows:

1. A data processing system to enable the exchange of an obligation between parties, the system comprising:
 a data storage unit having stored therein information about a shadow credit record and shadow debit record for a party, independent from a credit record and debit record maintained by an exchange institution; and
 a computer, coupled to said data storage unit, that is configured to (a) receive a transaction; (b) electronically adjust said shadow credit record and/or said shadow debit record in order to effect an exchange obligation arising from said transaction, allowing only those transactions that do not result in a value of said shadow debit record being less than a value of said shadow credit record; and (c) generate an instruction to said exchange institution at the end of a period of time to adjust said credit record and/or said debit record in accordance with the adjustment of said shadow credit record and/or said shadow debit record, wherein said instruction being an irrevocable, time invariant obligation placed on said exchange institution.⁵²

Manifestly, this claim requires a data storage unit and a computer. This set of differences from the method claim, according to Judge Lourie, however, fails to render the claim patent eligible: “The computer-based limitations recited in the system claims here cannot support any meaningful distinction from the computer-based limitations that failed to supply an ‘inventive concept’ to the related method claims.”⁵³

Judge Lourie states that “[a]lthough the system claims associate certain computer components with some of the method steps, none of the recited hardware offers a meaningful limitation beyond generally linking ‘the use of the [method] to a particular technological environment,’ that is, implementation via computers.”⁵⁴ In support of this proposition, Judge Lourie quotes *Prometheus*: “[The Court in *Benson*⁵⁵] held that simply implementing a mathematical principle on a physical machine, namely a computer, was not a patentable application of that principle.”⁵⁶ Judge Lourie’s take on these cases leads him to the conclusion that “[f]or all practical purposes, *every* general-purpose computer will include ‘a computer,’ ‘a data storage unit,’ and ‘a communications controller’ that

⁵² *CLS Bank*, 717 F.3d at 1289 (emphasis added by Judge Lourie).

⁵³ *Id.* at 1290.

⁵⁴ *Id.* at 1291 (quoting *Bilski v. Kappos*, 562 U.S. 593, 610 (2010)). *Bilski* in turn quotes *Diamond v. Diehr*, 450 U.S. 175, 191 (1981).

⁵⁵ *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972).

⁵⁶ *CLS Bank*, 717 F.3d at 1291 (quoting *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1301 (2012)).

would be capable of performing the same generalized functions required of the claimed systems to carry out the otherwise abstract methods recited therein.”⁵⁷

According to Judge Lourie, “the Supreme Court has told us that, while avoiding confusion between § 101 and §§ 102 and 103, merely adding existing computer technology to abstract ideas—mental steps—does not as a matter of substance convert an abstract idea into a machine.”⁵⁸ For Judge Lourie, “[t]he system claims are instead akin to stating the abstract idea of third-party intermediation and adding the words: ‘apply it’ on a computer.”⁵⁹

According to Judge Lourie, therefore, none of the claims presented in *CLS Bank v. Alice Corp.* defines subject matter eligible to be patented, and the most important jurisprudential contribution to Judge Lourie’s analysis is *Prometheus*.

The opinion by Judge Rader, joined by Judge Moore and, for some purposes, by Judges Linn and O’Malley, would find the system claims patent eligible. Judge Rader begins with legislative history of section 101, of 35 U.S.C., stating that “whether a new process, machine, and so on is ‘inventive’ is not an issue under Section 101; the condition for ‘more’ than novelty is contained only in Section 103.”⁶⁰ In noting that Congress added the words “or discovered” to section 100(a), Judge Rader concludes that “Congress made it irrelevant whether a new process, machine, and so on was ‘discovered’ rather than ‘invented.’”⁶¹ Furthermore, in relating in considerable detail the legislative history behind section 103, Judge Rader points out that “the central thrust of the 1952 Act removed ‘unmeasurable’ inquiries into ‘inventiveness’ and instead supplied the nonobviousness requirement of Section 103.”⁶² Moreover, the basis for the principle, articulated in *Prometheus*, that “[l]aws of nature, natural phenomena, and abstract ideas” are not patent eligible, is “to prevent the ‘monopolization’ of the ‘basic tools of scientific and technological work,’ which ‘might tend to impede innovation more than it would tend to promote it.’”⁶³ Judge

⁵⁷ *Id.* Presumably, the circumstance that every general-purpose computer contains these recited components provides Judge Lourie a basis for denying patent eligibility, even though such a basis results from further extrapolation of the judicial exception to patentability of an abstract idea.

⁵⁸ *Id.* at 1291–92. This may be a reference to *Gottschalk v. Benson*, 409 U.S. 63 (1972). See *supra* text accompanying note 56.

⁵⁹ *Id.* at 1291 (citing *Prometheus*, 132 S. Ct. at 1294).

⁶⁰ *Id.* at 1294.

⁶¹ *Id.* at 1295.

⁶² *CLS Bank*, 717 F.3d at 1296.

⁶³ *Id.* at 1297 (citing *Prometheus*, 132 S. Ct. at 1293).

Rader quotes excerpts from *Bilski*, *Diehr*, and *Benson* to the effect that “an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.”⁶⁴

In applying section 101, it is necessary to consider the claim as a whole.⁶⁵ Judge Rader explicitly criticizes Judge Lourie’s abstraction analysis for purposes of determining patent eligibility:

Any claim can be stripped down, simplified, generalized, or paraphrased to remove all of its concrete limitations, until at its core, something that could be characterized as an abstract idea is revealed. Such an approach would “if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious.” [*Diamond v. Diehr*, 450 U.S.] at 189 n. 12, 101 S. Ct. 1048; see also *Prometheus*, 132 S. Ct. at 1293. A court cannot go hunting for abstractions by ignoring the concrete, palpable, tangible limitations of the invention the patentee actually claims.⁶⁶

After these preliminary observations, Judge Rader offers a different reading of *Prometheus* for its evaluation of patent eligibility. “The relevant inquiry must be whether a claim includes *meaningful* limitations restricting it to an application, rather than merely an abstract idea.”⁶⁷ Moreover,

The key to this inquiry is whether the claims tie the otherwise abstract idea to a *specific way* of doing something with a computer, or a *specific computer* for doing something; if so, they likely will be patent eligible, unlike claims directed to *nothing more than the idea* of doing that thing on a computer. While no particular type of limitation is necessary, meaningful limitations may include the computer being part of the solution, being integral to the performance of the method, or containing an improvement in computer technology.⁶⁸

Finally, “[a]t bottom, where the claim is tied to a computer in such a way that the computer plays a meaningful role in the performance of the claimed invention, and the claim does not pre-empt virtually all uses of an underlying abstract idea, the claim is patent eligible.”⁶⁹

⁶⁴ *Id.* at 1297–98 (emphasis in original).

⁶⁵ *Id.* at 1298 (citing *Diamond v. Diehr*, 450 U.S. 171, 188 (1981)).

⁶⁶ *Id.*

⁶⁷ *Id.* at 1299 (emphasis in original). “[D]o the patent claims add *enough* to their statements of the correlations to allow the processes they describe to qualify as patent-eligible processes that *apply* natural laws?” *Id.* (citing *Prometheus*, 132 S. Ct. at 1293) (emphasis in original).

⁶⁸ *CLS Bank*, 717 F.3d at 1302 (emphasis in original) (citing *SiRF Tech., Inc. v. Int’l Trade Comm’n*, 601 F.3d 1319, 1332–33 (Fed. Cir. 2010); *In re Alappat*, 33 F.3d 1526, 1544 (Fed. Cir. 1994)).

⁶⁹ *Id.* at 1302.

As to the requirement of “inventiveness” in connection with the *Prometheus* patent eligibility analysis, Judge Rader says that the term “must be read as shorthand for its inquiry into whether implementing the abstract idea in the context of the claimed invention inherently requires the recited steps.”⁷⁰ Judge Rader then provides a specific analysis of what is meant by the term “inventiveness”:

Thus, in *Prometheus*, the Supreme Court recognized that the additional steps were those that *anyone* wanting to use the natural law would *necessarily* use. *Prometheus*, 132 S. Ct. at 1298. If, to implement the abstract concept, one *must* perform the additional step, then the step merely separately restates an element of the abstract idea, and thus does not further limit the abstract concept to a practical application.⁷¹

Applying the standards he has set forth to determine patent eligibility, Judge Rader concludes that the system claims are patent eligible. “Even viewed generally, the claim covers the use of a computer and other hardware specifically programmed to solve a complex problem.”⁷² Judge Rader devotes paragraphs of the opinion to point out the specific nature of the claimed functionality of the system.⁷³ He points out that there are many ways of using an escrow arrangement that are outside of the claims and that practicing the recited steps is not inherent in the process of using an escrow.⁷⁴

On the other hand, Judge Rader concludes that the method claims are not patent eligible, because, among other things, they fail to reference a computer except, perhaps, implicitly, and therefore they are too abstract to recite patent eligible subject matter.⁷⁵

While Judges Linn and O’Malley are in accord with Judges Rader and Moore in finding the system claims patent eligible,⁷⁶ Judges Linn and O’Malley would also find the method claims patent eligible, because the record below establishes that the method claims are practiced in a computer and have a breadth corresponding to that of the system claims.⁷⁷

⁷⁰ *Id.* at 1303.

⁷¹ *Id.* At this point, Judge Rader criticizes the use by Judge Lourie of an “inventive concept” for injecting, into the abstract exception inquiry, an ingenuity requirement that is nowhere found in the patent laws. *See id.* at 1303 n.5.

⁷² *Id.* at 1307.

⁷³ *See id.* at 1307–09.

⁷⁴ *See CLS Bank*, 717 F.3d at 1309–10.

⁷⁵ *See id.* at 1312–13.

⁷⁶ *Id.* at 1332.

⁷⁷ *See id.* at 1328–32.

Judge Moore provided a separate opinion, joined by Judges Rader, Linn, and O'Malley. Judge Moore wrote:

I am concerned that the current interpretation of § 101, and in particular the abstract idea exception, is causing a free fall in the patent system. . . . See *Bilski, Prometheus, Myriad* (under consideration). . . . Holding that all of these claims are directed to no more than an abstract idea gives staggering breadth to what is meant to be a narrow judicial exception. . . . [I]f all of these claims, including the system claims, are not patent-eligible, 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.⁷⁸

Judge Moore disagrees with the approach of Judge Lourie. She cites the ancient Supreme Court case of *Burr v. Duryee* for the principle that a machine is a concrete thing, not an idea:

*A machine is a concrete thing, consisting of parts, or of certain devices and combinations of devices. The principle of a machine is properly defined to be "its mode of operations," or that peculiar combination of devices which distinguish it from other machines. A machine is not a principle or an idea.*⁷⁹

Judge Moore then points out that the Federal Circuit's *Alappat* decision provides rigorous support for the proposition (in conflict with Judge Lourie's view) that a programmed computer is a patent eligible machine:

Our court, sitting en banc, applied these principles to hold patent-eligible a claim that would read on a general purpose computer programmed to carry out the operations recited in the claim. *In re Alappat*, 33 F.3d 1526, 1545 (Fed.Cir.1994) (en banc). We stated that, although many of the means-plus-function elements recited in the only asserted independent claim represent circuitry elements that perform mathematical calculations, "the claimed invention as a whole is directed to a combination of interrelated elements which combine to form a machine" for performing the invention's anti-aliasing technique. *Id.* at 1544. We explained that "[t]his is not a disembodied mathematical concept which may be characterized as an 'abstract idea,' but rather a specific machine." *Id.* The patent applicant admitted that its claim "would read on a general purpose computer programmed to carry out the claimed invention." *Id.* at 1545. We nonetheless held that the claim was patent-eligible under § 101, explaining that "such programming *creates a new machine*, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant

⁷⁸ *Id.* at 1313.

⁷⁹ *Id.* at 1316 (quoting *Burr v. Duryee*, 68 U.S. 531, 570 (1863)) (emphasis added).

to instructions from program software.” *Id.* (emphasis added). Judge Lourie’s opinion completely repudiates Judge Rich’s approach in *Alappat*. The two are not reconcilable.⁸⁰

Judge Newman advances a much simpler set of rules in her opinion. It would seem that the abhorrence of patent claims that are too abstract is predicated on preventing the patent owner from having exclusive rights in all possible implementations of an abstract idea. The *Prometheus* decision opens with this justification for the three judicial exceptions to section 101:

“Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work.” *Gottschalk v. Benson*, 409 U.S. 63, 67, 93 S. Ct. 253, 34 L.Ed.2d 273 (1972). And monopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it.⁸¹

In response to arguments like this, Judge Newman points out that much of the focus on applying criteria for patent eligibility is driven by “concern for the public’s right to study the scientific and technologic knowledge contained in patents.”⁸² She explains that “[t]he premise of the debate is incorrect, for patented information is not barred from further study and experimentation in order to understand and build upon the knowledge disclosed in the patent.”⁸³ She proposes that the court adopt the principles that: (1) section 101 is broadly inclusive and should not be viewed as implying an abstractness test; (2) the form of the claim should not determine patent eligibility; and (3) experimental use of patented information should not be barred.⁸⁴ At bottom, as to section 101, Judge Newman is unambiguous: “I propose that the court return to the statute, and hold that when the subject matter is within the statutory classes in section 101, eligibility is established.”⁸⁵ These views would therefore find all of the claims patent eligible. Although the views of Judge Newman were not accepted by any of the other judges, they display a keen focus on considerations that underpin the debate among the judges.

⁸⁰ *CLS Bank*, 717 F.3d at 1316. Judge Rader’s opinion also references *Alappat* in this context. *Id.* at 1302, 1305. Judge Lourie argues that the “world of technology” has changed; he also states, correctly, that “[t]he Supreme Court has spoken since *Alappat* on the question of patent eligibility.” *Id.* at 1292.

⁸¹ *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2012).

⁸² *CLS Bank*, 717 F.3d at 1321.

⁸³ *Id.*

⁸⁴ *Id.* at 1322–27.

⁸⁵ *Id.* at 1326.

The last opinion in the case, by Judge Rader, entitled “additional reflections,”⁸⁶ amounts to something like a soliloquy in which Judge Rader recounts his experiences twenty-five years earlier in addressing patent eligibility in the case of *Arrhythmia Research Technology v. Corazonix Corp.*⁸⁷ In that case, Judges Newman, Lourie, and Rader held that an invention involving signal processing algorithms was patent eligible.⁸⁸ Judge Newman wrote the opinion for herself and Judge Lourie. Judge Rader wrote a concurring opinion in which he voiced the view that *Diamond v. Diehr* had specifically limited *Gottschalk v. Benson*;⁸⁹ he then urged “when all else fails (and the algorithm rule clearly has), consult the statute.”⁹⁰ Regrettably, this advice is somewhat disingenuous, in that section 101 is subject to a variety of readings. Moreover, Judge Rader’s concurring opinion in *Arrhythmia* depended in part on the view that *Diehr* had specifically limited *Benson*, whereas the implication of Judge Lourie is that *Prometheus* has given new life to *Benson*. Again, Judge Rader advises, “When all else fails, consult the statute!”⁹¹ Perhaps the sentiment can be paraphrased to mean “Ignore outmoded doctrine and attempt to fashion rules more consistent with good patent policy.”

The Supreme Court’s decision in *Alice* largely tracks the line of argument of Judge Lourie’s separate opinion.⁹² Like Justice Breyer in *Prometheus*, Justice Thomas writes for a unanimous Court in *Alice*, and, like Justice Breyer in *Prometheus*, opens his opinion with a reference to section 101.⁹³ Unlike Justice Breyer in *Prometheus*, however, Justice Thomas did not write the only opinion in *Alice*; Justice Sotomayor wrote a concurring opinion, in which she was joined by Justices Ginsberg and Breyer, stating that she adhered to the view that “any ‘claim that merely describes a method of doing business does not qualify as a “process” under § 101.’”⁹⁴ However, she also agreed that the method claims at issue are drawn to an

⁸⁶ *Id.* at 1333.

⁸⁷ *Id.* at 1333–35.

⁸⁸ *Arrhythmia Research Tech. v. Corazonix Corp.*, 958 F.2d 1053, 1054–55, 1061 (Fed. Cir. 1992).

⁸⁹ *Id.* at 1065. *See generally In re Taner*, 682 F.2d 787, 789–91 (C.C.P.A. 1982) (“Most recently in *Diehr*, the Supreme Court made clear that *Benson* stands for no more than the long established principle that laws of nature, natural phenomena, and abstract ideas are excluded from patent protection . . .”).

⁹⁰ *Arrhythmia Research Tech.*, 958 F.2d at 1066.

⁹¹ *CLS Bank*, 717 F.3d at 1335.

⁹² *See Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354–55 (2014).

⁹³ *See id.* at 2352.

⁹⁴ *Id.* at 2360 (quoting *Bilski v. Kappos*, 561 U.S. 593, 614 (2010) (Stevens, J., concurring)).

abstract idea and for that reason joined the opinion of the Court.⁹⁵

For the three judicial exceptions to section 101, Justice Thomas quotes from the Court's *Myriad* decision: "Laws of nature, natural phenomena, and abstract ideas are the basic tools of scientific and technological work."⁹⁶ To elaborate on why inventions otherwise eligible to be patented should not be eligible if one of these Court-made exceptions is present, the Court quotes a portion of the passage in its *Prometheus* decision that we quoted above in the context of Judge Newman's opinion: "Monopolization of those tools through the grant of a patent might tend to impede innovation more than it would tend to promote it, thereby thwarting the primary object of the patent laws."⁹⁷ Further relying on *Prometheus*, the Court admonishes, "We have 'repeatedly emphasized this . . . concern that patent law not inhibit further discovery by improperly tying up the future use of' these building blocks of human ingenuity."⁹⁸

The Court's opinion states its conclusion from the outset that the patent claims are directed to "the abstract idea of intermediated settlement."⁹⁹ In the Court's words:

The claims at issue relate to a computerized scheme for mitigating "settlement risk"—i.e., the risk that only one party to an agreed-upon financial exchange will satisfy its obligation. In particular, the claims are designed to facilitate the exchange of financial obligations between two parties by using a computer system as a third-party intermediary.¹⁰⁰

How does the Court determine whether patent claims are ineligible because directed to an abstract idea—or, for that matter, to a law of nature or natural phenomenon? Following the path blazed by Judge Lourie in his opinion below, Justice Thomas specifies a two-step process drawn from *Prometheus*: "First, we determine whether the claims at issue are directed to one of those patent-ineligible concepts."¹⁰¹ Second, if they are, then the court performs "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

⁹⁵ *Id.*

⁹⁶ *Id.* at 2354 (quoting *Ass'n for Molecular Pathology v. Myriad Generics, Inc.*, 133 S. Ct. 2107, 2116 (2013)).

⁹⁷ *Id.* at 2354 (quoting *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293 (2012)).

⁹⁸ *Alice Corp.*, 134 S. Ct. at 2354 (quoting *Prometheus*, 132 S. Ct. at 1301).

⁹⁹ *Id.* at 2355.

¹⁰⁰ *Id.* at 2352.

¹⁰¹ *Id.* at 2353.

concept itself.”¹⁰²

As to the first leg of the test, whether the claims are directed to a patent-ineligible concept, the Court states that:

On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk. Like the risk hedging in *Bilski*, the concept of intermediated settlement is “a fundamental economic practice long prevalent in our system of commerce.” *Ibid.*; *see, e.g.*, Emery, *Speculation on the Stock and Produce Exchanges of the United States*, in *7 Studies in History, Economics and Public Law* 283, 346–356 (1896) (discussing the use of a “clearinghouse” as an intermediary to reduce settlement risk). The use of a third-party intermediary (or “clearing house”) is also a building block of the modern economy. *See, e.g.*, Yadav, *The Problematic Case of Clearinghouses in Complex Markets*, 101 *Geo. L.J.* 387, 406–412 (2013); J. Hull, *Risk Management and Financial Institutions* 103–104 (3d ed. 2012). Thus, intermediated settlement, like hedging, is an “abstract idea” beyond the scope of § 101.¹⁰³

In determining whether the claims are directed to an abstract idea, without characterizing what it had done, the Court necessarily had to generalize the claims, which in fact are quite detailed.¹⁰⁴ Moreover, having generalized the claims, the Court proclaims that the generalization of the claims is “a fundamental economic practice long prevalent in our system of commerce” and involves “a building block of the modern economy.”¹⁰⁵ This generalization serves the Court’s purpose in finding an abstract idea to be present, and, in particular, an abstract idea that is both old (“long prevalent”) and “fundamental.” The Court’s determination that the inferred abstract idea is old enables it to denigrate the importance of the concept to the claimed subject matter, while its determination that the inferred abstract idea is fundamental implies that the claimed subject matter should be subject to further scrutiny, lest it prevent others from practicing what is said to be fundamental. Regrettably, this edifice of abstraction rests on the shaky ground of the generalization by which the Court departed from the language of the claims in the first place.

Moreover, also regrettably, the determination that the claims are directed to an abstract idea follows a *non sequitur*. The determination begins with the bizarre assertion that “[o]n their face, the claims before us

¹⁰² *Id.*

¹⁰³ *Id.* at 2356.

¹⁰⁴ The Court quotes claim 33, which the parties agreed was representative of the method claims. *Alice Corp.*, 134 S. Ct. at 2352 & n.2. I have reproduced claim 33 above in discussing the Federal Circuit’s ruling. *See supra* text accompanying note 40.

¹⁰⁵ *Alice Corp.*, 134 S. Ct. at 2356.

are drawn to the concept of intermediated settlement.”¹⁰⁶ Having made this assertion, the Court then states that the concept that it imputes to the claims is “a fundamental economic practice long prevalent in our system of commerce,” and thereafter asserts that “[t]hus, intermediated settlement, like hedging, is an ‘abstract idea’ beyond the scope of § 101.”¹⁰⁷ How does the fact that the claims are said to relate to “a fundamental economic practice long prevalent in our system of commerce” have any bearing on whether the “concept” is an abstract idea? The Court does not say. Would the result be different if the concept were not fundamental or not previously known? The Court does not say.

Having generalized the claims and determined that they are directed to an abstract idea, the Court turns to the second leg of the test, namely “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.’”¹⁰⁸ To conduct this search, the Court “must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.”¹⁰⁹

The Court concludes that the claims fail to “do more than simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer. . . . Taking the claim elements separately, the function performed by the computer at each step of the process is ‘[p]urely conventional.’”¹¹⁰ Moreover, when “[c]onsidered ‘as an ordered combination,’ the computer components of petitioner’s method ‘ad[d] nothing . . . that is not already present when the steps are considered separately.’ . . . Viewed as a whole, petitioner’s method claims simply recite the concept of intermediated settlement as performed by a generic computer.”¹¹¹ As a corollary to the analysis of this second leg of the test, the Court holds that “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible

¹⁰⁶ *Id.* at 2350. “On their face” the claims are not drawn to “a concept” but rather to a computer-implemented “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,” and the claimed method recites specific steps that are carried out by a computer. *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ *Id.* at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1294 (2012)).

¹⁰⁹ *Id.* at 2357 (citing *Prometheus*, 132 S. Ct. at 1294).

¹¹⁰ *Id.* (quoting *Prometheus*, 132 S. Ct. at 1298).

¹¹¹ *Alice Corp.*, 134 S. Ct. at 2357 (quoting *Prometheus*, 132 S. Ct. at 1298).

invention.”¹¹²

The system claims and computer-readable-medium claims are not directed to patent-eligible subject matter either, because “[t]his Court has long warned against interpreting § 101 in ways that make patent eligibility depend simply on the draftsman’s art.”¹¹³

We have said that each of these opinions in the Federal Circuit’s handling of *CLS Bank*, for different reasons, is informative of the meaning of *Prometheus*. We have seen that Judge Lourie’s opinion in *CLS Bank* defined the path that was followed by the Court in proceeding from *Prometheus* to *Alice*.

Judge Rader’s plurality opinion, using words we quoted above, accurately characterized the approach of these decisions as subjective and unpredictable: “Any claim can be stripped down, simplified, generalized, or paraphrased to remove all of its concrete limitations, until at its core, something that could be characterized as an abstract idea is revealed.”¹¹⁴ Quoting *Diamond v. Diehr*, he notes that such an approach can be used to invalidate any claim.¹¹⁵ Judge Rader admonishes that “[a] court cannot go hunting for abstractions by ignoring the concrete, palpable, tangible limitations of the invention the patentee actually claims.”¹¹⁶

Let us explore the implications of Judge Rader’s observations. For the first step, in determining whether a patent claim is drawn to a law of nature, natural phenomenon, or abstract idea, the Court’s procedure in *Prometheus* and *Alice* is to generalize the claim into an abstraction.¹¹⁷ After the generalization leads to the conclusion that a law of nature, natural phenomenon, or abstract idea is involved, the Court, for the second step, examines the claim to determine whether it contains an “inventive concept” that provides “significantly more” than the abstraction present in the claim.¹¹⁸

The two-step analysis of the Court disregards deeply ingrained principles by considering the claim limitations impressionistically rather than rigorously. Under these deeply ingrained principles of patent law, a claim in a patent is composed of parts, which are called “limitations” or

¹¹² *Id.* at 2358.

¹¹³ *Id.* at 2360 (internal quotations omitted).

¹¹⁴ *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1298 (Fed. Cir. 2013); *see supra* note 66 and accompanying text.

¹¹⁵ *CLS Bank*, 717 F.3d at 1298 (quoting *Diamond v. Diehr*, 450 U.S. 175, 189 n.12 (1981))

¹¹⁶ *Id.*

¹¹⁷ *See Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1296–97 (2012); *CLS Bank*, 717 F.3d at 1277–78.

¹¹⁸ *Prometheus*, 132 S. Ct. at 1294.

“elements” (the latter is the old-fashioned term).¹¹⁹ The combination of these limitations in the claim defines what is patented.¹²⁰ Almost always, some, and possibly all, of the limitations in a claim are old (*i.e.*, a matter of public information), but it is the specific combination of limitations in a claim that defines what the claim covers. A claim is not infringed unless each limitation in the claim has a counterpart in the thing accused of infringement.¹²¹ Similar rules are in play when a patent is being evaluated against requirements that it must cover subject matter that is new and nonobvious. A claim cannot be rejected by an examiner or declared invalid by a court on the basis of anticipation or obviousness, unless each limitation in the claim has a counterpart in one or more items that were a matter of public information, that is, in the “prior art,” as of the date the patent application was filed.¹²²

Under the first leg of the test, as we have pointed out, the Court generalizes the claim. Because the Court generalizes the claim, it fails to address rigorously each of the claim limitations. Under the second leg of the test, after the generalization leads to the conclusion that a law of nature, natural phenomenon, or abstract idea is involved, the Court searches for and evaluates what it calls an “inventive concept” in the claim, which is another form of generalization. When the Court evaluates the “inventive concept,” therefore, it similarly fails to address rigorously each of the claim limitations.

Although the Court argues that it is considering the claim as a whole as required by the patent laws,¹²³ it is not doing so. Its generalization of the claim in the first and second steps allows the Court to dodge any rigorous consideration of the claim limitations. Because the Court’s approach to patent eligibility allows the Court to avoid rigorous consideration of the claim limitations, the Court’s approach can be used to invalidate any claim

¹¹⁹ See 35 U.S.C. § 112 (2012).

¹²⁰ See *id.*

¹²¹ See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 727 (2002). This circumstance is called “literal infringement”; even when literal infringement is not present, when it is established that the accused structure differs only in insubstantial ways from what is literally claimed, then infringement may sometimes be established under the doctrine of equivalents, if it is determined that the patent owner did not surrender coverage of such structure in prosecution of the application for the patent. *Id.*

¹²² “To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (C.C.P.A. 1974). ‘All words in a claim must be considered in judging the patentability of that claim against the prior art.’ *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970).” MANUAL OF PATENT EXAMINING PROCEDURE § 2143.03 (9th ed. March 2014), available at http://businessmultiware.com/discountprovider_en/apply_to_usa/documents/2100_2143_03.htm.

¹²³ *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2355 n.3 (2014).

in any patent.¹²⁴ For example, *Diamond v. Diehr*,¹²⁵ decided by the Court in 1981, and discussed in *Alice*, concerned a process of molding rubber in which the temperature of the mold is constantly monitored. The temperature measurements are sent to a computer that uses an algorithm (the prior art Arrhenius equation) to repeatedly recalculate the cure time of the rubber. When the recalculated cure time is equal to the time elapsed since the mold was closed, the computer signals a device to open the mold.¹²⁶ The Patent and Trademark Office, following the Court's 1972 decision in *Gottschalk v. Benson*¹²⁷ (which was also discussed in *Alice*), rejected the claims in the application because they included steps carried out by a computer under control of a stored program.¹²⁸ By a 5-4 vote, the Court held that the claims are eligible subject matter because they are directed to a method of molding rubber, even though in several steps of the process a mathematical equation and a programmed digital computer are used.¹²⁹

¹²⁴ Compare the analysis provided in *Diamond v. Diehr*, 450 U.S. 175, 189, n.12 (1981) cited by Judge Rader (*see* text accompanying notes 66 and 114) of precisely the same line of argument that was made for ineligibility: "To accept the analysis proffered by the petitioner would, if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious." This analysis is discussed in further detail below. In *Alice*, the Court claims, "we tread carefully in construing this exclusionary principle lest it swallow all of patent law." *Alice Corp.*, 134 S. Ct. at 2354. The Court cites *Prometheus* for the principle that "[a]t some level, 'all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.'" *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1293–94 (2012). For this point the Court again cites *Prometheus*, 132 S. Ct. at 1293. Then, citing *Diehr*, 450 U.S. at 187, the Court argues that "an invention is not rendered ineligible for patent simply because it involves an abstract concept." Finally, citing *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972), the Court maintains that "[a]pplications of such concepts to a new and useful end remain eligible for patent protection." *Alice Corp.*, 134 S. Ct. at 2354. The Court argues that it is respecting these principles in distinguishing between patents that claim the "building blocks of human ingenuity and those that integrate the building blocks into something more, thereby transforming them into a patent-eligible invention." *Id.* at 2354 (citing *Prometheus*, 132 S. Ct. at 1294) (nested quotation marks, ellipses, and brackets have been removed for purposes of clarity in the last two quotations). However, this argument by the Court does nothing to change the arbitrary nature of the Court's test for eligibility under section 101.

¹²⁵ 450 U.S. 175, 178–79 (1981).

¹²⁶ *Id.*

¹²⁷ 409 U.S. 63, 71–72 (1972).

¹²⁸ *Diehr*, 450 U.S. at 179–80.

¹²⁹ *See id.* at 184–85.

Diamond v. Diehr, in turn, spawned a series of lower-court decisions leading to the granting of many patents for computer-implemented inventions.¹³⁰

The Court's decision in *Diamond v. Diehr* did not follow the approach to eligibility determinations used in *Prometheus*, *Myriad*, and *Alice*. Had it done so, it could well have reached precisely the opposite conclusion.¹³¹ To illustrate this point, we imagine here how the patent claims in *Diamond v. Diehr* might have fared under the two-step approach heralded by *Prometheus*, *Myriad*, and *Alice*. We consider first whether the claims in *Diamond v. Diehr* implicate a law of nature, natural phenomenon, or abstract idea. They do. The claims involve a law of nature—namely, the Arrhenius equation—which determines the cure time of rubber in the mold.

Under the second step, since one of the three exceptions to eligibility is involved, we turn to the search for an “inventive concept,” that is, “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.’”¹³² We look at the claims “separately” and then as an “ordered combination.” The claims focus on solving the Arrhenius equation, with the only other feature being the molding of rubber, a process well known in the prior art.¹³³ Because the law of nature dominates the claim and because molding of rubber fails to add “significantly more” than the ineligible concept itself, a court deciding *Diamond v. Diehr* today,

¹³⁰ See, e.g., *State Street Bank & Trust Co. v. Signature Financial Group*, 149 F.3d 1368, 1377 (Fed. Cir. 1998) (holding that claims directed to a data processing system for managing a financial services configuration of a mutual fund portfolio constituted statutory subject matter, and could not be denied patent coverage simply because they involve a mathematical algorithm or implement a business method); *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) (holding that an anti-aliasing rasterizer for reducing jagged edges in pixelated displays cannot be denied a patent on the basis of the mathematical algorithm (abstract idea) exception to section 101).

¹³¹ The author is not suggesting that *Diamond v. Diehr* was decided incorrectly, but rather that even where the decisions in *Prometheus*, *Myriad*, and *Alice* have referenced patent claims said to be eligible for patenting, the logic of these decisions can be used to show ineligibility of such claims.

¹³² *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014).

¹³³ “The Patent and Trademark Office Board of Appeals expressly found that ‘the only difference between the conventional methods of operating a molding press and that claimed in [the] application rests in those steps of the claims which relate to the calculation incident to the solution of the mathematical problem or formula used to control the mold heater and the automatic opening of the press.’” *Diehr*, 450 U.S. at 208 (Stevens, J., dissenting) (quoting *In re Diehr*, 602 F.2d 982, 984 (C.C.P.A. 1979)).

in the wake of *Prometheus*, *Myriad*, and *Alice* could easily conclude that the claims at issue there would not have been eligible for patenting.

If one would object that in *Diamond v. Diehr* there is also the concept of constantly monitoring temperature of the mold in real time, one can reply, first of all, that the Arrhenius equation is well known in the art, and that once it is decided to use the equation to calculate the cure time of rubber, it is a simple matter to instrument the mold to determine the mold temperature as a function of time. Furthermore, it is well known to monitor temperature in real time for a wide range of processes, even, for example, when one bakes a cake at home in the oven.

If the Court's approach to patent eligibility can be used to invalidate any claim in any patent, then how does one know whether to use the approach in fact to invalidate a patent claim? In *Alice*, the Court states "we tread carefully in construing this exclusionary principle lest it swallow all of patent law," but fails to articulate any limits to its approach.¹³⁴ Because the Court fails to provide a basis for determining when its approach should be used to conclude that a patent claim is ineligible to be patented, the Court's approach to eligibility is hopelessly subjective and, frankly, useless.

Judge Rader's opinion points to another flaw in the Court's approach in *Prometheus* and *Alice*: the confusion of the eligibility determination under section 101 with requirements under sections 102 and 103 for novelty and nonobviousness.¹³⁵ In staking out the course he believes is proper for section 101 (forming a basis for his criticism of the opinion of Judge Lourie, which was later followed by the Court), he quotes from *Diamond v. Diehr*: "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."¹³⁶

In the second step of the two-step process recited in *Prometheus* and *Alice*, the Court embarks on "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."¹³⁷ In that search, however, the Court chooses to dismiss claim limitations that it regards as "conventional."¹³⁸ Thus, in *Alice*,

¹³⁴ *Alice Corp.*, 134 S. Ct. at 2354.

¹³⁵ See *CLS Bank Int'l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1303 (Fed. Cir. 2013) (Rader, J., concurring in part and dissenting in part).

¹³⁶ *Id.* at 1303 (quoting *Diamond v. Diehr*, 450 U.S. 175, 190 (1981)). See also opinion of Judge Moore: "[M]oreover, my colleagues' analysis imbues the § 101 inquiry with a time-dependency that is more appropriately the province of §§ 102 and 103." *Id.* at 1315 (Moore, J., dissenting).

¹³⁷ *Alice Corp.*, 134 S. Ct. at 2354.

¹³⁸ *Id.* at 1284.

the Court quotes from *Prometheus* and says that the function performed by the computer at each step of the process is “purely conventional.”¹³⁹ In *Prometheus*, the Court says that the “determining” step in the claims at issue “tells doctors to engage in well-understood, routine, conventional activity previously engaged in by scientists who work in the field.”¹⁴⁰ This dismissive approach by which the Court ignores claim limitations that it regards as “routine” or “conventional” conflates the determination of patent eligibility under section 101 with the determination of novelty and nonobviousness under sections 102 and 103 respectively.

There was a time when the Court knew the difference between section 101 and sections 102 and 103. In *Diamond v. Diehr*, referenced by Judge Rader, the Court specifically noted the difference and criticized an eligibility analysis that confuses these sections:

In determining the eligibility of respondents’ claimed process for patent protection under § 101, their claims must be considered as a whole. It is inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis. This is particularly true in a process claim because a new combination of steps in a process may be patentable even though all the constituents of the combination were well known and in common use before the combination was made. The “novelty” of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter.¹⁴¹

¹³⁹ *Id.* at 2351.

¹⁴⁰ *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1291, 1297–98 (2012).

¹⁴¹ *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981). The dissection of a claim into old and new parts is precisely what the Court has done in *Prometheus*, *Myriad*, and *Alice*. For support, these cases look to *Parker v. Flook*, 437 U.S. 584, 590 (1978). *See, e.g., Prometheus*, 132 S. Ct. at 1298. That approach was explicitly criticized in *Diamond v. Diehr*:

It is argued that the procedure of dissecting a claim into old and new elements is mandated by our decision in *Flook* which noted that a mathematical algorithm must be assumed to be within the “prior art.” It is from this language that the petitioner premises his argument that if everything other than the algorithm is determined to be old in the art, then the claim cannot recite statutory subject matter. The fallacy in this argument is that we did not hold in *Flook* that the mathematical algorithm could not be considered at all when making the § 101 determination. To accept the analysis proffered by the petitioner would, if carried to its extreme, make all inventions unpatentable because all inventions can be reduced to underlying principles of nature which, once known, make their implementation obvious. The analysis suggested by the petitioner

The opinion of Judge Moore in *CLS Bank* sheds light on additional implications of *Prometheus* and *Alice*. We have quoted above her view that “if all of these claims, including the system claims, are not patent-eligible, 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.”¹⁴² Indeed, in prosecuting patent applications for computer-implemented inventions since *Alice*, the author’s experience follows that of many other patent practitioners in routinely receiving claim rejections based on allegedly patent-ineligible subject matter. No new application directed to a computer-implemented invention is safe from the risk of an ineligibility determination under *Alice*.

Judge Moore also pointed to long and ample precedent holding that a programmed computer should be considered to be a new machine that is configured by its programming.¹⁴³ Her criticism of Judge Lourie for ignoring *Alappat*, viewed from a post-*Alice* perspective, can be understood as a critique of the Court’s decision in *Alice*. Indeed, it takes a *tour de force* of willfulness to say with a straight face, as the Court does in *Alice*, that claims to a computer system programmed to perform a specific set of processes are directed to an “abstract idea.”

The separate opinion of Judges Linn and O’Malley sheds another light on the implications of *Prometheus* and *Alice*. As discussed above, Judges Linn and O’Malley would also find the method claims patent eligible because the record below establishes that the method claims are practiced in a computer and have a breadth corresponding to that of the system claims.¹⁴⁴ In other words, for Judges Linn and O’Malley, just as for the Court in *Alice*, the eligibility of all the claims should rise or fall together, although the consequence for Judges Linn and O’Malley is that all of the claims should be found to be eligible, rather than ineligible.

Judge Newman’s opinion in *CLS Bank* brilliantly attacks the premise of *Prometheus* and *Alice*.¹⁴⁵ The Court’s rationale in *Alice*, for example, is based on the “concern that patent law not inhibit further discovery by improperly tying up the future use of’ these building blocks [laws of

would also undermine our earlier decisions regarding the criteria to consider in determining the eligibility of a process for patent protection.

450 U.S. at 189 n.12 (citations omitted).

¹⁴² *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1313 (Fed. Cir. 2013); see *supra* text accompanying note 78.

¹⁴³ See *supra* text accompanying note 80 (citing *In re Alappat*, 33 F.3d 1526, 1544–45 (Fed. Cir. 1994)).

¹⁴⁴ See *CLS Bank*, 717 F.3d at 1328–32.

¹⁴⁵ See *supra* text accompanying notes 82–84.

nature, natural phenomena, and abstract ideas] of human ingenuity.”¹⁴⁶ The concern expressed by the Court is for the improper tying up of future use of the laws of nature, natural phenomena, and abstract ideas. However, even when the Court finds that an abstract idea is implicated in a claim, the claim invariably has more detail than the abstract idea, and the additional detail provides a context that limits the scope of the exclusive rights granted by the claim when it appears in an issued patent.

In *Alice*, as admitted by the Court, the claims relate to “a computerized scheme for mitigating ‘settlement risk’—i.e., the risk that only one party to an agreed-upon financial exchange will satisfy its obligation.”¹⁴⁷ Moreover, as admitted by the Court, “the claims are designed to facilitate the exchange of financial obligations between two parties by using a computer system as a third-party intermediary.”¹⁴⁸ The claims, which appear in a patent issued by the United States Patent and Trademark Office (USPTO), had been vetted for novelty and obviousness by the USPTO. The claims do not cover prior art solutions for mitigating settlement risk, but rather a solution where the computer acts as the third-party intermediary, and, even then, the claims do not cover every possible type of computer-intermediated settlement.¹⁴⁹ Given this specific context, how can it be said that the claims in the *Alice* patent would inhibit further discovery by improperly tying up the future use of the building block of this abstract idea of human ingenuity?

Similarly, the patent claims in *Prometheus* have a specific context. They require administering a specific class of drugs and determining the amount of a specific metabolite in the subject receiving administration of the drug. Given this context, how can it be said that the claims in the *Prometheus* patents would inhibit further discovery by improperly tying up the future use of the building block of this law of nature discovered by human ingenuity? In *Prometheus*, the Court argues that the patent claims at issue “tie up the doctor’s subsequent treatment decision whether that treatment does, or does not, change in light of the inference he has drawn using the correlations.”¹⁵⁰

¹⁴⁶ *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1301 (2012)).

¹⁴⁷ *Id.* at 2352.

¹⁴⁸ *Id.*

¹⁴⁹ Judge Rader’s opinion, shows in detail the specific nature of these limitations, and concludes that “[l]abeling this system claim an ‘abstract concept’ wrenches all meaning from those words, and turns a narrow exception into one which may swallow the expansive rule (and with it much of the investment and innovation in software).” *CLS Bank*, 717 F.3d at 1303 (Rader, J., concurring in part and dissenting in part).

¹⁵⁰ *Prometheus*, 132 S. Ct. at 1302.

That argument is false, since there is an exemption under the patent law for treatment by a physician.¹⁵¹

The Court further argues that the claims “threaten to inhibit the development of more refined treatment recommendations (like that embodied in Mayo’s test), that combine Prometheus Laboratories’ correlations with later discovered features of metabolites, human physiology or individual patient characteristics.”¹⁵² If there is a question whether the patent claims “improperly” tie up future use of the research by Prometheus, given the very specific context of the patent claims, it is hard to see how the patent claims are overreaching. Of course, the claims did not in fact inhibit Mayo’s test, because Mayo introduced the test. Moreover, the existence of the patents provided a valuable incentive to Prometheus to introduce its test, and absent the prospect of obtaining patents for its efforts, Prometheus may well have not made the effort to develop and introduce the test.

In commenting on the Court’s rationale for exceptions to eligibility grafted onto the statute by the Court, Judge Newman observes that it is based on “the misperception that study of patented subject matter is precluded” and remarks that “[t]he idea that experimentation with patented information is restricted is the basis of the view that patenting inhibits scientific advance.”¹⁵³ She shows reasons why this view ignores the premises of the patent system: “the Court has recognized that ‘[t]he federal patent system thus embodies a carefully crafted bargain for encouraging the creation and disclosure of new, useful, and unobvious advances in technology and design in return for the exclusive right to practice the invention for a period of years.’”¹⁵⁴

Moreover, Judge Newman states that “[t]his disclosure is available to produce further advance, on further study and experimentation. The Court long ago recognized that the scientific and technological information in patents may be studied, evaluated, tested, improved upon, compared, etc.”¹⁵⁵ Judge Newman quotes Justice Story in *Whittemore v. Cutter*: “It could never have been the intention of the legislature to punish a man, who constructed such a machine merely for philosophical [in a footnote, Judge Newman explains this means “scientific” in the language of that era]

¹⁵¹ See 35 U.S.C. § 287(c) (2012).

¹⁵² *Prometheus*, 132 S. Ct. at 1302.

¹⁵³ *CLS Bank*, 717 F.3d at 1322.

¹⁵⁴ *Id.* at 1323 (citing *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 150–51 (1989)); *J.E.M. Ag Supply, Inc. v. Pioneer Hi-Bred Int’l, Inc.*, 534 U.S. 124, 142 (2001) (“The disclosure required by the Patent Act is ‘the *quid pro quo* of the right to exclude.’”); *Kewanee Oil Co. v. Bicron Corp.*, 416 U.S. 470, 484 (1974).

¹⁵⁵ *CLS Bank*, 717 F.3d at 1323.

experiments, or for the purpose of ascertaining the sufficiency of the machine to produce its described effects.”¹⁵⁶ After a thoughtful study of judicial precedent and articles of commentators, Judge Newman states:

Patents do not prevent experimentation with patented subject matter, whether the purpose is scientific knowledge or commercial potential. To hold otherwise would be to deny a foundation of the system of patents. However, the popular press has accepted the theory that experimentation is barred for patented subject matter, as have my colleagues, who cite that position as grounds for restricting eligibility under section 101.¹⁵⁷

To the Court’s trilogy of ineligibility decisions in *Prometheus*, *Myriad*, and *Alice*, there is an irony that flows straight from the patent policies discussed by Judge Newman. In denying patent eligibility to medical diagnostics, isolated genomic DNA (and maybe other isolated naturally occurring compositions), and a range of computer-related inventions, the Court is fostering a retreat by technology-based companies into the land of trade secrets. If a company cannot patent an invention, it will wherever possible try to maintain the invention as a trade secret. What can the Court say to that manner of “improperly tying up the future use of these building blocks of human ingenuity”¹⁵⁸—when the building blocks are maintained as trade secrets? Whatever the disadvantages of the patent system imagined by the Court in denying patent eligibility to broad categories of inventions, they are of less concern than the darkness that comes from keeping innovations bottled up as trade secrets. An important key to the patent system lies in the grant of exclusive rights for a limited period of time in exchange for disclosure of the invention in sufficient detail so that a person of ordinary skill in the art can implement the invention.

Because patents provide a property right developed to reward innovation, the introduction of uncontrolled subjectivity into the determination of patent eligibility is particularly troubling. For innovators to use the patent system, it is critical that the property rights granted by patents be durable and predictable.¹⁵⁹ The Court undermines the incentives created by the patent system.

¹⁵⁶ *Id.* (quoting *Whitemore v. Cutter*, 29 F. Cas. 1120, 1121 (C.C.D. Mass. 1813)) (footnote omitted).

¹⁵⁷ *Id.* at 1324 (footnotes omitted).

¹⁵⁸ *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014).

¹⁵⁹ Although Judge Lourie sought to provide in his patent eligibility analysis “a framework that will provide guidance and predictability for patent applicants and examiners, litigants, and the courts,” *CLS Bank*, 717 F.3d at 1277 (Lourie, J., concurring), the Court’s decision in *Alice*, which is based on Judge Lourie’s analysis, fails to provide such predictability. See *supra* text accompanying note 27.

A reading of *Prometheus*, *Myriad*, and *Alice*, showing the flaws illuminated by the comments of the Federal Circuit judges above, produces an impression that the justices deciding these cases were motivated less by the rationale for their decisions of ineligibility than they were by the results that their decisions of ineligibility would engender. In 2013, before the decision in *Alice* was handed down by the Court, Google Inc., the search engine behemoth, with the support of President Obama,¹⁶⁰ was backing legislation, H.R. 3309, to amend the patent laws to make it more difficult for companies to assert patents, according to Google, so as to “address the explosion of abusive patent litigation.”¹⁶¹ Specifically, according to Google,

patent trolls are abusing a flood of questionable patents—like those on basic e-commerce tools such as online shopping carts and shipment notification emails—to attack supermarkets, hotels, restaurants, retailers, and many other businesses, large and small. Trolls use the threat of time-consuming and expensive litigation to extort settlements, even where their claims wouldn’t hold up in court.¹⁶²

The term “patent troll” was coined in 2001 by Peter Detkin, then assistant general counsel at Intel Corp., to describe a patent holder who seeks to enforce a patent without intending to practice the technology that is patented.¹⁶³ This term has been invoked over the years, as it has been invoked by Google, as justification for patent law “reform,” *i.e.*, changing the patent system to make it harder to assert patents. However, the Senate counterpart to H.R. 3309, namely S. 1720, had a more critical and nuanced reception in hearings in December 2013¹⁶⁴ and the legislation had not

¹⁶⁰ See Pete Kasperowicz, *House Votes to Thwart “Patent Trolls,” Floor Action*, THE HILL (December 5, 2013, 01:14 PM), <http://thehill.com/blogs/floor-action/votes/192206-house-votes-to-thwart-patent-trolls>.

¹⁶¹ See Kent Walker, *Innovation, Not Litigation*, GOOGLE PUBLIC POLICY BLOG (Dec. 4, 2013), <http://googlepublicpolicy.blogspot.com/2013/12/innovation-not-litigation.html>.

¹⁶² *Id.*

¹⁶³ Brenda Sandburg, *A Modest Proposal*, THE RECORDER (May 9, 2005), available at <http://cyberlaw.stanford.edu/attachments/patentarticle.pdf>. Peter Detkin, who after accepting employment as counsel with the patent aggregator Intellectual Ventures, co-founded by Microsoft alumni Nathan Myhrvold and Edward Jung, changed his position and decided that the term “patent troll” should apply only to one who “must own no more than a few patents of questionable merit and is not in any business related to the patents.” Brenda Sandburg, “Patent Troll,” WORD SPY (Aug. 13, 2003), <http://wordspy.com/index.php?word=patent-troll> (citing Brenda Sandburg, *Inventor’s Lawyer Makes a Pile From Patents*, THE RECORDER (July 30, 2001), <http://www.therecorder.com/id=900005370208/invenots-lawyer-makes-a-pile-from-patents>).

¹⁶⁴ See Tony Dutra, *Senate Patent Litigation Reform Hearing Calls For More Deliberate Approach Than House*, PAT., TRADEMARK & COPYRIGHT L. DAILY (Dec. 18, 2013), <http://www.bna.com/>

passed when the Supreme Court handed down the *Alice* decision in June 2014.¹⁶⁵

Before the *Alice* decision, four liberal members of the Court had already embraced language of patent “reform” in *eBay v. MercExchange*,¹⁶⁶ wherein the Court made it more difficult to get injunctions in patent cases. A concurring opinion by four of the more liberal Justices (Kennedy, Stevens, Souter, and Breyer) criticized the use of patents “not as a basis for producing and selling goods but, instead, primarily for obtaining licensing fees.”¹⁶⁷ The opinion said that the threat of an injunction “can be employed as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent.”¹⁶⁸ The opinion furthermore criticized “the burgeoning number of patents over business methods,” some of which have “potential vagueness and suspect validity.”¹⁶⁹

Given this bent of some members of the Court to attack what they believe to be a misuse of the patent system, and given the legislative stalemate on enactment of H.R. 3309, the Court may have felt that the facts of *Alice* gave it an opportunity to continue to engage in its own patent “reform” to further limit the reach of the patent system by rendering more subject matter ineligible for patenting.

Notwithstanding any motivation of the Justices in issuing the *Alice* decision to curtail the patent system, patents are a significant driver of the economy of the United States.¹⁷⁰ In fact, small businesses produce a disproportionately large amount of innovation in non-capital intensive industries.¹⁷¹ The “troll” and patent “reform” rhetoric tends to gloss over the importance of patents to innovation and to small companies in particular.¹⁷² A big company on the receiving end of a large patent

senate-patent-litigation-n17179880853.

¹⁶⁵ See Innovation Act, H.R. 3309, 113th Cong. (2013–2014), available at <https://beta.congress.gov/bill/113th-congress/house-bill/3309/actions> (last visited Feb. 13, 2015) (showing that the last major action occurred on Dec. 9, 2013).

¹⁶⁶ See *eBay v. MercExchange*, 547 U.S. 388, 395 (2006) (Kennedy, J., concurring).

¹⁶⁷ *Id.*

¹⁶⁸ *Id.*

¹⁶⁹ *Id.* at 397.

¹⁷⁰ See, e.g., ECON. AND STATISTICS ADMIN. & U.S. PATENT AND TRADEMARK OFFICE, INTELLECTUAL PROPERTY AND THE U.S. ECONOMY: INDUSTRIES IN FOCUS 1, 1 (2012), http://www.uspto.gov/news/publications/IP_Report_March_2012.pdf.

¹⁷¹ See Zoltan J. Acs & David B. Audretsch, *Innovation, Market Structure, and Firm Size*, 69 REV. OF ECON. AND STAT. 567, 567 (1987).

¹⁷² *C.f.* Judge Newman’s Federal Circuit Decision:

These issues [under section 101] have arisen in connection with today’s newest fields of science and technology; that is, computer-based and

infringement judgment gets there only after a judicial trial has determined that the patent is not invalid and is infringed. A patent at the end of this process has thus been vetted by both the PTO and by the judicial system. Consider the case of *Eolas v. Microsoft*,¹⁷³ which is a poster boy for those who rail against patent trolls. Eolas obtained a judgment against Microsoft for \$521 million for infringement by Microsoft's Internet Explorer web browser of a patent covering the use of a web browser in a fully interactive environment.¹⁷⁴ The patented technology "enables a user to view news clips or play games across the Internet."¹⁷⁵ The patent asserted in this litigation, number 5,838,906,¹⁷⁶ withstood not only the original PTO examination leading to issuance and a trial at which its validity was challenged, but also a re-examination proceeding¹⁷⁷ before Microsoft settled¹⁷⁸ with Eolas for an undisclosed sum. Indeed, the patent survived yet another re-examination proceeding that was pending at the time of settlement.¹⁷⁹ Given the rigorous examinations that the patent has withstood, it is certainly not a patent that could be termed "questionable."

There is a story behind the patent in the *Eolas v. Microsoft* dispute. The inventors, Mike Doyle and others, were researchers in the Innovative Software Systems Group at the University of California San Francisco campus, and, as part of their research, developed the software leading to

related advances, and advances in the biological sciences. These fields have spawned today's dominant industries, and produced spectacular benefits. I have seen no competent analysis of how these technologies and industries would be affected by a fundamental reduction in patent-eligibility. Dramatic innovations, and public and economic benefits, have been achieved under the patent law as it has existed.

CLS Bank Int'l v. Alice Corp. Pty. Ltd., 717 F.3d 1269, 1322 (Fed. Cir. 2013) (Newman, J., concurring in part and dissenting in part).

¹⁷³ *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1328 (Fed. Cir. 2005) (setting aside judgment of \$521 million for patent infringement pending remand for retrial of anticipation and obviousness defenses and inequitable conduct defense).

¹⁷⁴ *See id.*

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *Ex parte* reexamination certificate issued June 6, 2006 on request 90/006,831, available at <http://patft.uspto.gov/netahtml/PTO/srchnum.htm> (enter patent number in "query box" and click "search," then click "images," then click "reexamination" to access the certificate).

¹⁷⁸ Todd Bishop, *Microsoft, Eolas Settle Big Patent Dispute (Updated)*, THE MICROSOFT BLOG (Aug. 30, 2007), <http://blog.seattlepi.com/microsoft/2007/08/30/microsoft-eolas-settle-big-patent-dispute-updated>.

¹⁷⁹ *Ex parte* reexamination certificate issued Feb. 3, 2009, on request 90/007,858 available at <http://patft.uspto.gov/netahtml/PTO/srchnum.htm> (enter patent number in "query box" and click "search," click "images," and then click "full document" to access the certificate).

the patent obtained by the University of California.¹⁸⁰ In 1994, the University of California granted Eolas, the company founded by Doyle, an exclusive license to commercialize the technology.¹⁸¹ In that same year, Microsoft and other companies were offered a license to the technology, but turned it down.¹⁸² However, while the patent application was pending, Microsoft adopted the technology, and, by the time the patent had issued, Eolas was crowded out of the marketplace.¹⁸³

Here, as in many situations where the plaintiff is charged with being a “patent troll,” the infringement litigation brought by the plaintiff was to enforce patent rights that were granted to an innovator forced out of the marketplace by a company adopting the innovator’s technology and having superior marketing power.¹⁸⁴ If the patent system were not available, it is doubtful that Eolas would have been formed to pursue Doyle’s innovation. In other words, the *Eolas v. Microsoft* litigation is evidence, not of the failure of the patent system, but of its success.

Patents provide incentives to innovation. Wielding the bludgeon of patent eligibility to strike down an invention that is not deemed patent-worthy affects not just single inventions but rather whole classes of inventions. When the patent claims of the diagnostic test of Prometheus Laboratories were found ineligible for patenting by the Court, the patent eligibility of all diagnostic tests is put in doubt. When an invention is not patent-worthy, there are tools more refined than patent eligibility to remove the invention from the patent system. Specifically, as we have pointed out, for a claimed invention that has survived the patent eligibility hurdle, the patent laws require that the invention must additionally be new and nonobvious in order to be patented.¹⁸⁵ And these laws similarly require that the invention must be well described and clearly claimed.¹⁸⁶

In another irony, despite the Court’s warning about clever patent drafting, the Court’s increasingly narrow rules for patent eligibility will inspire precisely what it warns against: clever patent drafting.

To overcome the effective patent ban on the diagnostics industry, patent attorneys will work to include more hardware in diagnostic procedures, making it harder for a court to say that a claim involves merely

¹⁸⁰ See Press Release, Office of the President, Questions and Answers About UC/Eolas Patent Infringement Suit Against Microsoft, <http://www.ucop.edu/news/archives/2003/aug11art1qanda.htm> (last modified Nov. 6, 2004).

¹⁸¹ See *id.*

¹⁸² See *id.*

¹⁸³ See *id.*

¹⁸⁴ See *id.*

¹⁸⁵ See 35 U.S.C. §§ 102–03 (2012).

¹⁸⁶ See *id.* § 112.

a law of nature. Similarly, to overcome the effective patent ban on products isolated from nature, patent attorneys will seek to add more non-natural components. For computer-related inventions, patent attorneys will also seek to claim physical effects wherever possible. Claims with such features are more likely to be successful.

Cases decided in lower courts since *Alice* offer little relief to those who would like a strong patent system in the United States. The procedural history of *Ultramercial, LLC v. Hulu, LLC*¹⁸⁷ illustrates the unpredictability and chaos injected into the patent system by *Alice*. In *Ultramercial II*, which was decided June 21, 2013, after the Federal Circuit's split decision of May 10, 2013, in *CLS Bank*, the Federal Circuit determined that the detailed eleven-step method claim in the patent under review remained patent-eligible after the *Prometheus* decision.¹⁸⁸ Judge Lourie provided a concurring opinion.¹⁸⁹ (It will be remembered that it was the opinion of Judge Lourie in *CLS Bank* that informed the Supreme Court's decision in *Alice*). In *Ultramercial II* Judge Lourie stated that the Federal Circuit should be guided by the principles of evaluating patent eligibility he laid down in *CLS Bank* as being faithful to the Supreme Court's decision in *Prometheus*.¹⁹⁰ Using these principles, Judge Lourie concluded that the claims of the subject patent were patent eligible:

Likewise, although the number of claim limitations is also not an indication of patent-eligibility, unlike the method claims in *CLS Bank*, in my view, the added limitations in these claims represent significantly more than the underlying abstract idea of using advertising as an exchange or currency and, as a consequence, do not preempt the use of that idea in all fields. See *CLS Bank*, 717 F.3d at 1287–88, 2013 WL 1920941, at *15. Thus, under the *CLS Bank* plurality analysis, I agree with the majority that the district court erred in dismissing Ultramercial's claims for lack of subject matter eligibility under § 101 due to abstractness.¹⁹¹

¹⁸⁷ See *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323 (Fed. Cir. 2011), cert. granted, judgment vacated and remanded for consideration in light of *Prometheus* sub nom ("Ultramercial I") (reversing patent-ineligibility determination of trial court); *WildTangent, Inc. v. Ultramercial, LLC*, 132 S. Ct. 2431 (2012); 722 F.3d 1335 (Fed. Cir. 2013), cert. granted, judgment vacated and remanded for consideration in light of *Alice* sub nom ("Ultramercial II") (deeming claimed subject matter patent-eligible after *Prometheus*); *WildTangent, Inc. v. Ultramercial*, 134 S. Ct. 2870 (2014); 772 F.3d 709 (Fed. Cir. 2014) ("Ultramercial III") (deeming claimed subject matter patent-ineligible under *Alice*).

¹⁸⁸ *Ultramercial II*, 772 F.3d 1335, 1348, 1353–54 (Fed. Cir. 2013).

¹⁸⁹ *Id.* at 1354.

¹⁹⁰ *Id.*

¹⁹¹ *Id.* at 1355.

In *Ultramercial III*, presented with precisely the same patent claims, and analyzing these claims under the principles of *Alice*, of which Judge Lourie can rightly be characterized as the architect as a result of his opinion in *CLS Bank*, Judge Lourie concludes that these claims are not patent eligible.¹⁹² Thus, using the same analytical framework as in *Ultramercial II*, Judge Lourie finds that the same claims are not patent eligible, flatly changing his mind. He states that the claims are “directed to an abstract idea, which is, as the district court found, a method of using advertising as an exchange or currency.”¹⁹³ Moreover, “[w]e conclude that the limitations of the #545 claims do not transform the abstract idea that they recite into patent eligible subject matter because the claims simply instruct the practitioner to implement the abstract idea with routine, conventional activity.”¹⁹⁴ The opinion offers no explanation for the divergence of Judge Lourie’s conclusions between *Ultramercial II* and *Ultramercial III*.

That the architect of the analysis underpinning *Alice* could have two different views of patent eligibility of the same claims over a period of seventeen months using the same analytical framework each time provides important evidence of the deficiencies of the analytical framework and ultimately, of its subjectivity.

Judge Mayer provided a concurring opinion in *Ultramercial III* emphasizing three points.¹⁹⁵ First, he said that defenses based on ineligible subject matter should be addressed at the outset of litigation.¹⁹⁶ He advocated resolving the question of patent eligibility on the basis of only the pleadings, just as the case had been decided by the trial court.¹⁹⁷ In his view, this summary disposition would protect the public against vexatious litigation and worthless patents.¹⁹⁸ Second, he says that no presumption of patent eligibility should attend the section 101 inquiry.¹⁹⁹ Finally, Judge Mayer says that the Supreme Court’s decision in *Alice*, for all intents and purposes, sets out a “technological arts” test for patent eligibility (as opposed to a determination that the subject is fundamentally “entrepreneurial” in nature).²⁰⁰

In other words, to protect against “vexatious litigation” and “worthless patents,” every litigation and every litigated patent will be subjected to the

¹⁹² *Ultramercial III*, 772 F.3d 709, 711–12 (Fed. Cir. 2014).

¹⁹³ *Id.* at 715.

¹⁹⁴ *Id.*

¹⁹⁵ *Id.* at 717.

¹⁹⁶ *Id.* at 718.

¹⁹⁷ *Id.* at 718.

¹⁹⁸ *Ultramercial III*, 772 F.3d at 718.

¹⁹⁹ *Id.* at 720–21.

²⁰⁰ *Id.* at 721.

circular reasoning of *Alice* and *Prometheus* at the outset of litigation and before a full understanding of the patent claims has been developed. This Star Chamber inquiry will determine if an abstract idea, or law of nature, or natural phenomenon is recited in the claim as generalized by the court, and, if so, whether the remainder of the claim, as additionally generalized by the court, adds “substantially more” than the court’s initial generalization, disregarding steps in the claims that are deemed to be “routine, conventional activity.”

To this author, the cure posited by Judge Mayer is far worse than the disease, and in fact Judge Mayer’s position stakes out new turf that is not reached in the methodology of the Supreme Court’s *Alice* decision.

The decision of the Federal Circuit in *DDR Holdings, LLC v. Hotels.com, L.P.*²⁰¹ offers the prospect that a few software inventions involving use of the Internet might escape the clutches of invalidation under *Alice*. The court held that:

[T]hese claims stand apart because they do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet. Instead, the claimed solution is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks. In particular, the #399 patent’s claims address the problem of retaining website visitors that, if adhering to the routine, conventional functioning of Internet hyperlink protocol, would be instantly transported away from a host’s website after “clicking” on an advertisement and activating a hyperlink.²⁰²

The court distinguished the claims at issue in *DDR* from those in *Ultramerical III* as not “broadly and generically” claiming “‘use of the Internet’ to perform an abstract business practice (with insignificant added activity).”²⁰³ “Unlike the claims in *Ultramerical*, the claims at issue here specify how interactions with the Internet are manipulated to yield a desired result—a result that overrides the routine and conventional sequence of events ordinarily triggered by the click of a hyperlink.”²⁰⁴ Specifically, the court held that “[w]hen the limitations of the #399 patent’s asserted claims are taken together as an ordered combination, the claims recite an invention that is not merely the routine or conventional use of the Internet.”²⁰⁵ Moreover, the court held that “the claims at issue do not

²⁰¹ *DDR Holdings, LLC v. Hotels.com, L.P.*, No. 2013-1505, 2014 WL 6845152, at *10 (Fed. Cir. Dec. 5, 2014).

²⁰² *Id.*

²⁰³ *Id.* at *12.

²⁰⁴ *Id.*

²⁰⁵ *Id.*

attempt to preempt every application of the idea of increasing sales by making two web pages look the same, or of any other variant suggested by NLG.”²⁰⁶ Citing *Ultramercial III*, however, the court cautioned that “not all claims purporting to address Internet-centric challenges are eligible for patent.”²⁰⁷

Judge Mayer dissented on the ground that the claims “simply describe an abstract concept—that an online merchant’s sales can be increased if two web pages have the same ‘look and feel’—and apply that concept using a generic computer.”²⁰⁸ He repeated the arguments he made in *Ultramercial III*, that *Alice* “articulated a technological arts test for patent eligibility.”²⁰⁹ He further argues—remarkably in the view of this author—that claim breadth, by itself, is evidence that the claims are directed to a patent-ineligible abstract idea:

The potential scope of DDR’s patents is staggering, arguably covering vast swaths of Internet commerce. DDR has already brought infringement actions against ten defendants, including Digital River, Inc., Expedia, Inc., Travelocity.com, L.P., and Orbitz Worldwide, LLC. See J.A. 255–63; *ante* at —. DDR’s claims are patent ineligible because their broad and sweeping reach is vastly disproportionate to their minimal technological disclosure. See *Mayo*, 132 S.Ct. at 1303 (In assessing patent eligibility, “the underlying functional concern . . . is a *relative* one: how much future innovation is foreclosed relative to the contribution of the inventor.”).²¹⁰

Although the extent to which Judge Mayer’s views on section 101 will hold sway remains to be determined, the mere fact that these views exist is a monument to the power of the *Alice* analysis in eviscerating patents.

In an amicus brief in *Prometheus*, the United States Government urged the Court to articulate broad eligibility standards that would be applied in an inclusive manner:

The utility of every invention turns on its ability to produce a predictable chain of reactions leading to the desired result. If the “natural” character of that link were sufficient to trigger the “law of nature” exception to patent-eligibility under section 101, the exception would swallow the rule. . . . It is therefore essential to apply the judicially crafted “law of nature” and “physical

²⁰⁶ *Id.*

²⁰⁷ *DDR Holdings, LLC*, 2014 WL 6845152 at *11.

²⁰⁸ *Id.* at *17.

²⁰⁹ *Id.* at *18.

²¹⁰ *Id.* at *19.

phenomenon” exceptions to Section 101 in a restrained manner and with an eye toward their animating purposes.²¹¹

The *Prometheus* decision characterized the Government’s position: “[T]he Government argues that virtually any step beyond a statement of a law of nature itself should transform an unpatentable law of nature into a potentially patentable application sufficient to satisfy § 101’s demands.”²¹²

In rejecting the Government’s position and charting an activist position in invalidating patent claims with an unrestrained drive to find ineligible subject matter, the Court is harming the patent system by rendering it less inclusive and less predictable.

The Supreme Court has now issued three decisions that cast numerous innovations into a widening pit of patent ineligibility. *Prometheus*, in providing the underpinning to *Alice*, seems destined to become the *Dred Scott* of patent law decisions. Those who care about incentives for invention must look elsewhere to restore what the Court has uprooted.

In this respect, the separate opinion of Judge Rader’s “additional reflections” in the Federal Circuit’s *CLS Bank* decision has a curious resonance: “When all else fails, consult the statute!”²¹³ The statute, taken alone, has failed to deliver the patent system from the vague and subjective exceptions created by the Court. A simple legislative amendment to that statute, section 101, would solve these problems:

Section 101 of Title 35 of the United States Code shall be amended to read as follows:

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~~ unless the conditions and requirements of this title have not been satisfied.

The amendment is constructed to clarify that Congress intended section 101 to specify the classes of claimed subject matter that are eligible to be patented and to rule out the judicial activism by the Supreme Court in finding purported exceptions to patent eligibility.

The proposed amendment therefore has the effect of implementing the position taken in the Government’s brief in *Prometheus* that the threshold of

²¹¹ Brief for the United States as Amicus Curiae Supporting Neither Party at 19, *Mayo Collaborative Servs. v. Prometheus, Labs.*, 132 S. Ct. 1289 (2012) (No. 10-1150), 2011 WL 4040414.

²¹² *Mayo Collaborative Servs. v. Prometheus Labs.*, 132 S. Ct. 1289, 1303 (2012).

²¹³ *CLS Bank Int’l v. Alice Corp. Pty. Ltd.*, 717 F.3d 1269, 1335 (Fed. Cir. 2013); see *supra* text accompanying note 91.

section 101 should be relatively low and that sections 102, 103, and 112 can be used to weed out inventions that are not patent-worthy.

The patent system would be in better condition with such an amendment.²¹⁴

²¹⁴ Such an amendment to section 101 to override the Supreme Court ruling in *Prometheus* would parallel the change by the 1952 Patent Act in section 103 to override the Supreme Court ruling in *Cuno Engineering Corp. v. Automatic Devices Corp.*, 314 U.S. 84, 90–91 (1941) (“flash of creative genius”) with respect to what constitutes an “invention.” This latter story is recounted in Judge Rader’s opinion in *CLS Bank*, 717 F.3d at 1295. See also *Graham v. John Deere Co.*, 383 U.S. 1, 15 (1966).