The Hard Side of Software: The Difficulty of Patenting Software Amid Abstract Ideas

# INTRODUCTION

The United States Patent System is rooted in the Constitution and first laid out in law by the Patent Act of 1790.[[1]](#footnote-2) The first patent granted by the United States of America was to Samuel Hopkins for an improved method for creating pot ash and pearl ash.[[2]](#footnote-3) Today, patent law is codified in Title 35 of the United States Code as enacted Congress in 1952[[3]](#footnote-4), the United States Patent and Trademark Office (“USPTO”) has issued its ten millionth patent; computer and software related patents reign supreme, the byproducts of a global economy increasingly dependent on computer technology.[[4]](#footnote-5) Each year half of the patents issued by the USPTO are related to software.[[5]](#footnote-6) Despite the ubiquity of computer technology, software patents can be difficult to obtain and defend due to uncertainty of what is patent eligible.[[6]](#footnote-7) Over the years the Federal Circuit and Supreme Court have made decisions tipping the balance one way or the other, often without full explanation of the decision. One purpose of the patent system is to increase innovation and technology. Uncertainty in the system may chill innovation, as those seeking to protect their investments are unable to and so turn elsewhere, hindering innovation.[[7]](#footnote-8)

One of the more recent upset to the certain of patents is the Supreme Court’s decision in *Alice Corp. Pty. Ltd. v. CLS Bank Int’l.* In the month after *Alice*, 830 patent applications were withdrawn.[[8]](#footnote-9) In the year following the decision, the Federal Circuit used the two-step framework in ten cases[[9]](#footnote-10) and only found one to contain patent eligible subject matter.[[10]](#footnote-11). Perhaps seeking to undo this uncertainty, the USPTO acted to counter act the difficulty created by *Alice* with the Berkheimer Memorandum.

In *Berkheimer v. HP Inc.[[11]](#footnote-12)* the Federal Circuit held a software method invalid as abstract. The opinion itself does little to tip the see-saw of uncertainty for software patents. However, in wake of the decision, the USPTO issued a guidance memorandum (hereinafter the Berkheimer Memorandum) to the Examining Corps, which changed the field once again. This document contained official instruction for patent examiners regarding how to issue patent rejections based on § 101. The memorandum severely limited how patent examiners reject patent applications for not meeting the requirements for patent eligibility under § 101.[[12]](#footnote-13) A momentary respite, this change eased the burden for applicants seeking software patents, but also created a diverging standard between the judicial system and the USPTO’s. This change could lead to granting patents of dubious quality, with patents granted because of an inability to reject them, rather than meeting qualifications.

The patent system has too long shoe-horned software patents into an antiquated system designed to encourage innovation of only physical inventions. The uncertainty of what is patent eligible frustrates the purpose of the patent system. Where possible, the Courts should use §§ 102, 103, and 112 invalidations, rather than § 101. Prioritizing these invalidations would allow the uncertainty of abstract ideas to be minimalized and allow innovation to proceed unchilled. It also removes the need for the USPTO to step in and regulate patent rejections. This note will guide readers through the legislative history and standards regarding software patents, the repercussions of the *Berkheimer* decision, and possible solution to this patent software dilemma.

# BACKGROUND: THE ROAD TO *MAYO/ALICE* AND *BERKHEIMER*

## Patentability

Patents may be obtained for “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”[[13]](#footnote-14) This broad statement is qualified by the concepts of patentability and patent eligibility, which are defined by both statute and judicial rulings.[[14]](#footnote-15) Patentability describes the standards to receive a patent, requiring an invention to be novel and nonobvious, definite and enabled.[[15]](#footnote-16) A novel patent is not anticipated by another invention. Anticipation requires each and every element of the claimed invention be disclosed in a single enabling prior art reference.[[16]](#footnote-17) Obviousness in its simplest terms requires that an invention be more than a combination of two prior art references.[[17]](#footnote-18) Enablement necessitates that a person of ordinary skill in the art be able to make and use the claimed invention.[[18]](#footnote-19) Closely related is the requirement that claims must particularly point out and distinctly claim the invention. Overly broad or vague claims fail to meet this requirement and are indefinite.[[19]](#footnote-20)

The second standard, patent eligibility, concerns what subject matter warrants the incentives and protections provided by patent law.[[20]](#footnote-21) These two standards are closely related and are often conflated by courts when patent validity is considered.[[21]](#footnote-22) Many abstract ideas are simply not novel, or their claims are overly broad. Using abstract ideas as a catch all for these problems has contributed to the uncertainty in the patent world today.

## Patent Eligibility: Laws of Nature, Natural Phenomena, and Abstract Ideas

The Supreme Court holds the statutory language “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof” contains an implicit exception disallowing patents for laws of nature, natural phenomena, and abstract ideas.[[22]](#footnote-23) These three exceptions prevent monopolies on foundational laws and concepts that many technologies may depend on, insuring that the limited monopoly provided for by law does not hinder innovation.[[23]](#footnote-24) However, too broad an interpretation of these exceptions would also impede the patenting of important discoveries, therefore an invention or discovery cannot be unpatentable merely because it contains natural phenomena or algorithm.[[24]](#footnote-25)

These three exceptions not always clearly defined or distinct from one another. Laws of nature include well known laws of physics such as gravity or Einstein’s famous “E = mc2”.[[25]](#footnote-26) Natural phenomena, more easily understood as products of nature, include more physical natural occurrences such as plants, minerals, lightning.[[26]](#footnote-27) The exceptions extend to even newly discovered uses of naturally occurring phenomenon.[[27]](#footnote-28) In *Funk Brothers Seed Co. v. Kalo Inoculant Co.* the disputed discovery was a mixture of bacteria for inoculating the seeds of several different types of plants at once, rather than separately.[[28]](#footnote-29) The court found the mixture ineligible for patent and therefore no infringement because the bacteria had not been altered; it was a natural phenomenon.[[29]](#footnote-30) In contrast, in *Diamond v. Chakrabarty*, a new species of bacteria that digested oil was upheld to be patentable because it was not naturally occurring and it was unpatentable simply because it was a living organism.[[30]](#footnote-31)What counts as an abstract ideas is not always clear.

Processes are expressly included within § 101: “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”[[31]](#footnote-32) However, process claims face great scrutiny under the judicial exception of abstract ideas. Machines, new manufactures and compositions of matter are physical and easily patentable, providing the invention meets requirements for patentability.[[32]](#footnote-33) Processes are not as tangible and can easily be classified as an abstract idea therefore are more difficult to patent.[[33]](#footnote-34)

## Abstract Ideas: Inconsistent Case Law

Abstract ideas often overlap with the other judicial exceptions of natural phenomena and laws of nature. There is no legal definition of “abstract ideas” and what is abstract can be difficult to describe. Algorithms and mathematical formulas are common examples of an abstract idea but can also fall under any or all of the three judicial exceptions, as certain natural laws are easily described mathematically.[[34]](#footnote-35) With no definition, applicants and litigants are left with vague statements as guidance, such as the following:

Limiting formulas to a particular technological environment will not make them patentable.[[35]](#footnote-36) Patents are not ineligible merely because they rely on a law of nature or algorithm.[[36]](#footnote-37) To be patentable, inventors must do more than describe the idea or law and append the words “apply it”.[[37]](#footnote-38) Patents must have additional steps outside of the patent ineligible concept that integrate the equation into the process as a whole.[[38]](#footnote-39) They must have an inventive concept outside of the patent ineligible idea.[[39]](#footnote-40)

Statements like these do give some clarity on what an applicant must do to meet the requirement of patent eligibility. However, the lack of a formal legal definition has led to contradictory application of these guidelines and inconsistent judicial decisions.

[Discuss Allapat – see state street - ] math allowed, how is it not just putting it in a technological environment? The formula is the process

[Discuss Arrhythmia Research Technology Inc. v. Corazonix Corp – see state street] – math applied. Contrast with benson

In 1972, before the rise of the digital age, the Supreme Court heard arguments for *Gottschalk v. Benson* regarding a method for converting binary coded decimal to pure binary. In binary coded decimal (BCD) each digit of a number is represented by a four-digit binary segment e.g. 534 would be represented as 0101-0011-0100, where 0101, 0011, and 0100 are the numbers 5, 3, and 4 respectively in pure binary; in pure binary 534 would be represented as 1000010110.[[40]](#footnote-41) With no definition of abstract ideas, the Court compared the claims with previous cases and facts.[[41]](#footnote-42) However, at the time the patentability of computer programs was still in debate, and the patent was held invalid because it has no practical exception outside of a digital computer.[[42]](#footnote-43) Clearly the Court did not understand the importance digital (the more advanced counter-part to analog) computers would play in the future, and so they dismissed the patent for having no use outside of computers. Although the claims described hardware components executing this algorithm, it was not enough to meet the Court’s requirements for patentability.

In 1980 the Supreme Court considered claims for a process for curing synthetic rubber in *Diamond v. Diehr*. This process relied heavily on a formula known as the Arrhenius equation. By continually taking temperature measurements, a digital computer would use the formula to provide an accurate cure time.[[43]](#footnote-44) Here the Supreme Court upheld the patent, stating the claims must be considered as a whole, and that use of a mathematical formula did not disqualify a patent. This decision seemly reversed *Benson*, but the Supreme Court, distinguished it from *Benson*, characterizing the *Diehr* claims as a method for curing rubber, rather than a math formula. The court emphasized examining the claims as a whole, rather than individually. Upon examination, the Court found that the additional steps integrated the equation into a process and therefore patentable. The patent did not seek to protect the formula, but rather the process of how the formula was used.[[44]](#footnote-45) Despite similar dependencies on mathematical formula, two different outcomes occurred. This suggests that physical transformation is required for patent eligibility[[45]](#footnote-46) and how an invention is described and labelled is critical to patent survival.

[Summary Paragraph, contrast these 4 different cases and discuss how they’re inconsistent with the “guidelines” in Bilski, Benson, Diehr, Flook. The Courts decisions are arbitrary]

## Older Methods for Determining Abstract Ideas

[Discuss abandoned state street test] – process produced a “useful, concrete and tangible result” - abandoned in favor of m-o-t (in re bilski). An early test

The “machine or transformation test” was used as the sole test by the Federal Circuit to determine patent eligibility of a process.[[46]](#footnote-47) This test, articulated in *Benson* and affirmed in *Diehr*.[[47]](#footnote-48), required an applicant to show the claim was tied to a machine, or that it transformed an article.[[48]](#footnote-49) If either of these criteria was met, then the process was not an abstract idea and therefore patent eligible. A claim “tied to a particular machine” is only implemented on a specific machine. The second path of the machine-or-transformation test deems a process patent eligible if it transforms “particular article into a different state or thing”.[[49]](#footnote-50) In *Diehr*, the process included a mathematical formula, a perfect example of an abstract idea. Despite this, it met both criteria of the machine-or-transformation test and was therefore patent eligible.[[50]](#footnote-51) The formula calculated the time to cure rubber and was integrated into a process tied to a specific oven and technological set up. With these additional elements it was deemed patent eligible[[51]](#footnote-52) In contrast a few years prior to *Diehr*,in *Parker v. Flook*, the applicant had claimed a “Method for Updating Alarm Limits” which was a mathematical formula for updating alarm limits during catalytic conversion processes. There was no novel machine or physical connection and was deemed not patent eligible.[[52]](#footnote-53) The test is contradictory, stating that patents may be eligible when tied to a particular machine, but in the same opinion the Court notes that ineligibility under § 101 “cannot be circumvented by attempting to limit the use of the formula to a particular environment.”[[53]](#footnote-54) This contradiction and limiting nature of the test epitomizes the difficulty of patenting software today.

When first introduced this test was not the sole determining inquiry it became. In *Benson* the Supreme Court stated it was “*the* clue” to patent eligibility.[[54]](#footnote-55) Initially used with the caveat that a process may be valid even without meeting the machine-or-transformation tests, the test was reaffirmed several times and lost the caveat until eventually the Federal Circuit used it as the sole test.[[55]](#footnote-56) Soon after the Supreme Court stated the machine-or-transformation test was never intended to be an exhaustive or exclusive test, arguing the machine-or-transformation test would create uncertainty as to the patentability of software.[[56]](#footnote-57) The test still sees uses, but is only *a* consideration, rather than *the* consideration.[[57]](#footnote-58) Today each patent must be considered on a case-by-case basis, comparing the invention at hand to others rather than applying a set of factors.[[58]](#footnote-59)

## SOFTWARE PATENTS & ABSTRACT IDEAS: WHY IS SOFTWARE DIFFICULT TO PATENT

Software is not easily sorted into the categories of 35 U.S.C. § 101. It not a “machine, manufacture, or composition of matter”, and must therefore be a “process”.[[59]](#footnote-60) Processes are not always physical and can easily be called abstract ideas. This difficulty extends to software, which is often difficult to patent for several reasons: 1) it is intangible; 2) software frequently is made up of algorithms (a classic example of an abstract idea); and 3) it can be seen as a mere representation of an abstract idea.[[60]](#footnote-61) Many, including a past director of the USPTO and a former Federal Circuit Judge, believe that this eligibility requirement is stifling innovation with its chilling effect on patents.[[61]](#footnote-62) These inherent difficulties require inventors to claim their inventions in specific ways. Early decisions relating to software patents seemed to require physical effects to make the software appear mechanical and more easily fit into the other statutory categories[[62]](#footnote-63). The outcomes of *Diehr* and *Benson* exhibit this requirement. In *Diehr*, the process for curing rubber was upheld despite of its reliance on a mathematical formula, because of the physical transformation that occurred in the rubber. *Benson*’s conversion from BCD to binary was not overtly physical therefore was invalidated.[[63]](#footnote-64)

[describe the meaning of utility]

## Alice: How We Got to Berkheimer

To help root software into the physical realm, applicants will often claim software with a Beauregard claim.[[64]](#footnote-65) These claims began in response to *In re Beauregard*, which quoted the Commissioner of Patents and Trademarks, who stated that software embodied in a tangible medium was patentable.[[65]](#footnote-66) Thus claims often contain a variation on the following, “A computer readable medium containing program instructions…”[[66]](#footnote-67) in an effort to connect the abstract nature of software with something tangible and real.

In 2012, the Supreme Court heard a petition concerning processes that help doctors who administer thiopurine drugs determine if a dosage is too low or too high in *Mayo Collaborative Servs. v. Prometheus Labs*.[[67]](#footnote-68) It introduced a two-step process to determine if an invention claims “building blocks of human ingenuity, which are ineligible for patent protection” or if the patent integrates building blocks into something more. This framework is the method of considering abstract ideas across all patent areas. *Mayo* marked a return of the inventive step line of inquiry but did not specify how much of an inventive step was necessary for patent eligibility, leaving the meaning of § 101 unclear.[[68]](#footnote-69)

[explain the meaning of “directed to”] – https://www.uspto.gov/web/offices/pac/mpep/s2106.html

In 2014, the patent world was rocked by *Alice Corp. Pty. Ltd. v. CLS Bank Int’l.*, in which the Supreme Court ruled that escrow software was a patent ineligible invention.[[69]](#footnote-70)The court reaffirmed solidified the two-step test described in *Mayo.[[70]](#footnote-71)* In step one of the framework the Court must determine if the claims at issue are directed to a patent-ineligible concept; if yes then they proceed to step two which asks: “what else is there in the claim before us?”[[71]](#footnote-72) This second step looks for an inventive step that elevates the patent to more than the ineligible concept itself.[[72]](#footnote-73) The claim elements must be considered individually and in combination. In the first step of the framework, the court determined that intermediated settlement was an abstract idea, comparing to the claims in *Benson*, *Flook*, and especially the risk hedging of *Bilski*.[[73]](#footnote-74) Moving to step two, the Court looked for additional features to show the claim was more than an attempt to monopolize the abstract idea.[[74]](#footnote-75) To ascertain this, the Court asked whether the claims did more than implement the abstract idea of escrow on a computer.[[75]](#footnote-76) The claims separately were a conventional and was simply the basic functions of a computer; as an ordered combination, nothing new was added already presented when the steps were considered separately.[[76]](#footnote-77) The claims added nothing new beyond what was already known and obvious about computers, thus were ruled an abstract idea.

[Describe the represents well-understood, routine, conventional activity standard.]

[Maybe describe the chart below?]

This framework drastically increased the invalidation of software at the District Courts, Patent Trial and Appeal Board and the Federal Circuit, with an average invalidation rate of 82.9% the first year.[[77]](#footnote-78) Of the 17 cases brought before the Federal Circuit, only 1 was validated (an invalidation rate of 94%).[[78]](#footnote-79) Newly filed patent cases dropped by 40% from 2014 to 2013.[[79]](#footnote-80) This drastic change set the stage for the *Berkheimer* decision.[[80]](#footnote-81) The Federal Circuit did not invalidate every patent brought before it, but the number remained high. The first case to survive post-*Alice* was *DDR Holdings, LLC v. Hotels.com*.[[81]](#footnote-82) A case that brought hope to many as the streak of invalidations came to an end. Just shortly before *Berkheimer*, *Core Wireless Licensing S.A.R.L. v. LG Electronics, Inc.* was decided, a software case concerning a GUI survived the vicious *Mayo/Alice* evaluation and was a beacon of hope for software patent applicants.[[82]](#footnote-83) Just one month later, *Berkheimer* was decided.[[83]](#footnote-84)

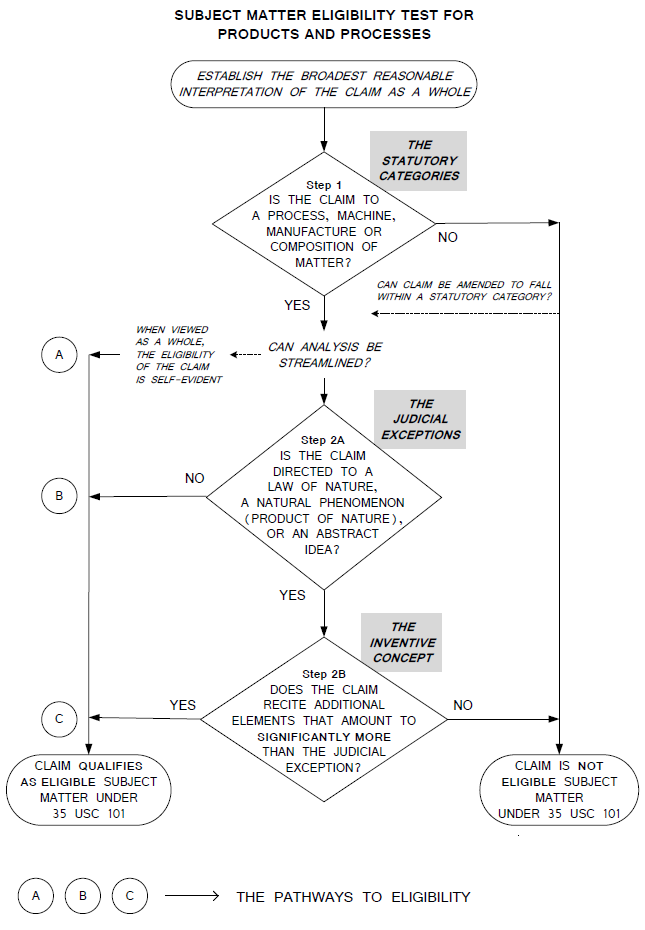


Figure 1 - The Mayo/Alice Test - M.P.E.P. § 2106-III

# THE *BERKHEIMER* DEICISION AND MEMORANDUM

In early 2018 the Federal Circuit heard oral arguments for *Berkheimer v. HP*. The Appellant, Steven Berkheimer, was the patentee and brought action for infringement of his patent that described methods for digital file processing and archiving.[[84]](#footnote-85) The claimed invention parsed files into objects and tags the objects to create relationships. The objects are then compared to archived objects to determining variation. The system eliminates redundant storage of common text and graphic element, improving operating efficient and storage.[[85]](#footnote-86) Finding several claims indefinite, the Court then considered patent eligibility of the claims.[[86]](#footnote-87)

Following the questions presented in *Mayo/Alice*, the Court found that the claims were directed to abstract ideas of parsing, comparing, storing and editing data. Some genuine issue of material fact remained concerning whether some of the claims contained transformative invention concept and was summarily remanded.[[87]](#footnote-88)

A few months later, the USPTO released a memorandum regarding changes in examination procedure pertaining to subject matter eligibility after *Berkheimer v. HP, Inc.*[[88]](#footnote-89) The memorandum reviews the steps of the *Mayo/Alice* framework and *Berkheimer* decision.[[89]](#footnote-90) The memorandum notes that the cases does not change the framework, it alleges that the decision clarified the inquiry of whether an additional element represents well-understood, routine, and conventional activity.[[90]](#footnote-91) Such a clarification is not obvious in the case itself, and seems to the author that the USPTO is reaching, using the *Berkheimer* decision as a means to stem the tide of invalidations emanating from the Courts in the wake of *Alice*.

Examiners when issuing a § 101 must following the *Mayo/Alice* framework. In accordance to the “clarification” in *Berkheimer*, the memorandum now requires examiners to support the rejection in final step of *Mayo/Alice* analysis (that the claim lacks additional element that amounts to significantly more than the judicial exception, and is a well-understood, routine, or conventional) in at least one of four ways.[[91]](#footnote-92) 1) the examiner must cite to an express statement in the patent application’s specification that demonstrates the well-understood, routine, conventional nature of the additional element; 2) the examiner must cite one of the listed court decisions in the Manual of Patent Examining Procedure [hereinafter M.P.E.P.] which note the well-understood, routine, conventional nature of the additional elements; 3) the examiner must cite a publication that demonstrates the well-understood, routine, conventional nature of the additional elements, or 4) a statement that is taking official notice of the well-understood, routine conventional nature of the additional element.[[92]](#footnote-93) The fourth option is only to be used when the examiner is certain, as person of ordinary skill in the art, and based upon person knowledge that the additional elements do not meet the requirements for patent eligibility.[[93]](#footnote-94)

These options provide various difficulties for the examiner. The first option requires the applicant to expressly admit that the claimed invention is conventional, something a competent applicant is unlikely to do because patent applications are written to convince examiners of claim invention’s novelty. Option two requires the examiner to cite one of the cases in listed in M.P.E.P. § 2106.05(d)(II). This sections only includes twenty different well-understood, routine, conventional activities, with approximately two cases per activities.[[94]](#footnote-95) While a large list, it is not exhaustive, so if the conventional activity is not listed among the cases cited, the examiner is not able to make the analogy and avail themselves of the three options if he or she wishes to make the rejection. Option three requires the examiner do additional research, searching for publications that proves the element is widely prevalent.[[95]](#footnote-96) Unless such a publication is already known to an examiner, given limited time and resources, the examiner may not be inclined to do the additional research required for such a rejection. The fourth option requires the examiner to rely on personal knowledge. This should only be used rarely, especially in instances of final rejection.[[96]](#footnote-97)

Patent examiners work is measured on a quota system, and revisiting patent applications do not always count towards an examiner’s count.[[97]](#footnote-98) With this system, an examiner is incentives to be as quick and efficient as possible in his or her rejections. As such, it does not benefit the examiner to be thorough in their rejections, making the difficulty options of the Berkheimer Memorandum even less likely. These difficulties are good news for software patent applicants and will hopefully help curb the invalidations of patents due to Alice. However, it is not be necessary for the USPTO to act to mitigate the action of the Courts and could lead to a diverging standard between the USPTO and the Courts as the Courts are not bound by the Berkheimer Memo or M.P.E.P.

# THE SOLUTION (Analysis)

The judicial exceptions to § 101 are in place to prevent monopolizing the foundational tools of science and technology.[[98]](#footnote-99) If patent is granted for a broad concept or idea, it would be possible to control an entire field of technology. This would frustrate the purpose of the patent system. An analogous ideology known as the merger doctrine is in place in copyright law. The merger doctrine applies to ideas that are expressible in limited ways. In those cases, the expression and the idea merge and become uncopyrightable.[[99]](#footnote-100) To copyright a certain expression of the idea would be to copyright the idea.

For example, it would be difficult if not impossible to copyright the rules to a sweepstakes. The rules for sweepstakes are all substantially the same, and to allow copyright on a single expression of the rules, would limit how another could explain how to enter, restrictions on age, and how a winner is selected. If artists created a poster describing yoga asanas, the artist is narrowly restricted in how he or she may depict the body in each pose, but may freely choose how to dress those depictions, the colors of the poster, and fonts. The artist would be free to protect the expressive details of the poster, but unable to protect the poses themselves, as it would prevent others from expressing the idea. Copyright is in place to advance knowledge and encourage the arts through economic incentives for authors.[[100]](#footnote-101)

Like the merger doctrine of copyright, judges seek to prevent monopolies of foundational knowledge by calling it an abstract idea. However, this creates uncertainty as to what is an abstract idea. This uncertainty may stunt innovation and leads to extra-judicial solutions such as the Berkheimer Memorandum. Rather than relying on the clunky and uncertain *Mayo/Alice* method, in which judges must determine if an invention lies within the vague boundaries of an uncertain idea, the courts should instead ask, “Would granting this patent block a basic tool of scientific technological work?”

The Supreme court asks this question in *Alice*, but the inquiry of whether the patent is abstract idea is asked and then the consideration of whether it would block a basic tool of science is evidence of an abstract idea, rather than starting point.[[101]](#footnote-102)Using this question as a starting point instead of whether it is a law of nature, product of nature, or an abstract idea, would root the analysis in more concrete terms. This question could be as open-ended or worse to the *Mayo/Alice* line of inquiry. However, the question would not be used alone. After answering affirmatively, the claim does resemble something so basic it is a building block or tool, the court should then turn to § 102 (novelty), § 103 (obviousness), § 112 (indefinite). Many inventions deemed to fall within the could also have been invalidated as lacking novelty, or obvious, or being overly broad.

*Bilski v. Kappos*,[[102]](#footnote-103) hedging method perhaps could have been classified as non-novel, as methods of hedging are well known throughout the practice. Perhaps it could be classified as obvious because it combined a known business method on a computer. The Court in *Alice* [[103]](#footnote-104), could have used a similar analysis. Escrow is well known and frequently practiced in business dealings, as such implementing it on a computer is not new or non-obvious. Such software is perhaps better suited to Copyright protection. In *Funk Bros.*,[[104]](#footnote-105) the discovered combination of bacteria could be rejected in terms of novelty, as the bacteria themselves were not new. This approach could also potentially change the outcome in *Ariosa Diagnostics Inc. v. Sequenom, Inc*.[[105]](#footnote-106) In *Ariosa* the claimed invention concerned a non-invasive method for detecting paternally inherited cffDNA in maternal plasma or serum. It was ruled patent-ineligible as laws of nature and natural phenomenon. However, if the patent had been approached with the question of whether such an invention would limit a basic tool of science rather than if it was a product of nature, perhaps the discovery would not have been invalidated.

Judge Plager of the Federal Circuit in a dissenting opinion stated, “I believe that this court should exercise its inherent power to control the processes of litigation, and insist that litigants, and trial courts, initially address patent invalidity issues in infringement suits in terms of the defenses provided in the statute: “conditions of patentability,” specifically §§ 102 and 103, and in addition §§ 112 and 251, and not foray into the jurisprudential morass of § 101 unless absolutely necessary” (citations omitted).[[106]](#footnote-107) The use of § 101 is not eliminated but should be reserved for inventions that lack utility, or are not a “process, machine, manufacture, or composition of matter”, or any new and useful improvement thereof”.[[107]](#footnote-108)

The Court need not visit every possible method of rejection as patent examiners do. This would be inefficient use of precious time in overcrowded courts. [discuss need to make the distinction between 101 and the other sections clearer. See after mayo page 544]

In *Benson*, the court found that the claim was “so abstract and sweeping as to cover both known and unknown uses of BCD to pure binary conversion”[[108]](#footnote-109) Rather sweeping the issue under the abstract ideas rug, the court should have relied on §§ 102, 103, or 112. The court could have stated the idea the was not novel, ruling this conversion had been done before, or if the claims lacked adequate description for the methods described, that the claims were indefinite.[[109]](#footnote-110) The progression of the legal system, and thereby the patent system, is slow. The full effects of the Berkheimer Memorandum are not yet clear, and hopefully will remove the uncertainty for software patents going forward. However, the Berkheimer Memorandum should have been necessary. It is positive change, but it is inconsistent with the opinion which sparked its creation. It should not be necessary for the USPTO to make a drastic change based on such an innocuous case to correct the failings of the Courts.

The current uncertainty curbs innovation by increasing the chances of patent invalidation. By relying less on § 101, innovation will not be curbed. This will prevent new technology areas from having the same difficulty as software fitting into the statutory scheme. In the following cases the Federal Circuit could have achieved the same result with §§ 102, 103, and 112 rather than relying on § 101. In other cases, reliance on the other statutory sections could have allowed an interesting new technology to be validated, rather than invalidated on § 101 grounds.

Wild tangent v. ultramercial

Ultramerical v. hulu

Digitech image tech v. electronics for imaging

Shortly after the *Alice* decision, the Federal Circuit heard arguments for *Planet Bingo, LLC v. VKGS LLC*.[[110]](#footnote-111) Planet Bingo alleged VKGS infringed its software patent for managing bingo games. The patent claimed computer-aided methods for storing sets of bingo numbers, tracking player payments, and verifying winning numbers. Following the *Mayo/Alice* framework, the Court determined that recording a bingo numbers was similar to the abstract idea of organizing human activity, similar to *Alice*.[[111]](#footnote-112) Moving to the second step, the found the invention lacking an inventive concept sufficient to transform the idea into a patent eligible application, noting that mere implementation on a computer is not enough.[[112]](#footnote-113) In seeking to apply §§ 102, 103, or 112, the Court could have asked if allowing this patent would block a basic scientific tool, which would likely be no, as bingo is not a tool. However, the Court could turn to novelty as bingo is not new, or the Court’s arguments could easily be turned into one of obviousness as the Court views the patent as something a human could do on paper with a pen.[[113]](#footnote-114)

Buy safe

Content extraction and transmission

# CONCLUSION

1. U.S. Const. art 1, § 8, cl. 8. [↑](#footnote-ref-2)
2. United States Patent and Trademark Office, 10 Million Patents, https://10millionpatents.uspto.gov/ (last visited Jan. 17, 2019). [↑](#footnote-ref-3)
3. United States Patent and Trademark Office, Manual of Patent Examining Procedure, Introduction (9th ed 2018) [hereinafter M.P.E.P.], *available at* https://www.uspto.gov/web/offices/pac/mpep/index.html. [↑](#footnote-ref-4)
4. *Supra* note 2. [↑](#footnote-ref-5)
5. Raymond Millien, *Alice Who? Over Half the U.S. Utility Patents Issued Annually are Software Related!*, IP Watchdog, (May 21, 2017), https://www.ipwatchdog.com/2017/05/21/alice-over-half-u-s-utility-patents-issued-annually-software/id=83367/; IFC Claims Patent Services, *2017 Patent Trends and Insights*, (last visited Jan. 1, 2019), https://www.ificlaims.com/rankings-trends-2017.htm. [↑](#footnote-ref-6)
6. *See e.g. Alice Corp. Pty. Ltd. v. CLS Bank Int’l.*,573 U.S. 208 (2014) (parenthetical)*, Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012) (parenthetical)*, Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018) (parenthetical); *Gottschalk v. Benson*, 409 U.S. 63 (1972) (parenthetical). [↑](#footnote-ref-7)
7. Joshua A. Kresh, *Patent Eligibility After Mayo: How Did We Get Here and Where Do We Go?*, 22 Fed. Circuit B.J. 521, 522 (2013) [↑](#footnote-ref-8)
8. *See* Jasper L. Tran, Software Patents: *A One-Year Review of Alice v. CLS Bank*, 97 J. PAT. & TRADEMARK OFF. SOC'Y, 532, 539-540 (2015) [↑](#footnote-ref-9)
9. *See* *Versata Dev. Grp., Inc. v. SAP America*, 793 F.3d 1306 (Fed. Cir. 2015); *Intellectual Ventures I LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1367-68 (Fed. Cir. 2015); *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1345 (Fed. Cir. 2015); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362-63 (Fed. Cir. 2012); *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1346-47 (Fed. Cir. 2014); *DDR Holdings, LLC v. Hotels.com*, L.P., 773 F.3d 1245, 1256 (Fed. Circ 2014); *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 721-22 (Fed. Cir. 2014); *buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1351 (Fed. Cir. 2014); *Planet Bingo, LLC v. VKGS LLC*, 576 F. Appx. 1005, 1006 (Fed. Cir. 2014); *Digitech Image Techs. v. Elecs. for Imaging*, 758 F.3d 1344, 1348-51 (Fed. Cir. 2014); Robert Daniel Garza, *Software Patents and Pretrial Dismissal Based on Ineligibility*, 24 Rich. J.L. & Tech. 1, 28 (2018). [↑](#footnote-ref-10)
10. *See DDR Holdings*, 773 F.3dat 1245. [↑](#footnote-ref-11)
11. *Berkheimer*, 881 F.3d at 1360. [↑](#footnote-ref-12)
12. *See* Memorandum from Robert W. Bahr, Deputy Commissioner for Patent Examination Policy, Deputy Comm'r of the U.S. Pat. & Trademark Off. to Patent Examiners (Apr 19, 2018) [hereinafter Berkheimer Memorandum], *available at* https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF [↑](#footnote-ref-13)
13. 35 U.S.C. § 101 (20XX). [↑](#footnote-ref-14)
14. 35 U.S.C. §§ 102, 103, 112; *Mayo*,566 U.S. at 70 (restating the long-held exceptions of 35 U.S.C. § 101: laws of nature, natural phenomena, and abstract ideas). [↑](#footnote-ref-15)
15. 35 U.S.C. §§ 102, 103, 112. [↑](#footnote-ref-16)
16. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987) (setting forth the anticipation rule used in judicial review and examiners at the USPTO). [↑](#footnote-ref-17)
17. *Graham v. John Deere Co.*, 383 U.S. 1 (1966) (introducing the four-factor test for obviousness). Obviousness in patent law is more complicated than put forth here. Those seeking to evaluate obviousness must avoid hindsight bias and determine 1) scope and content of prior art; 2) differences between prior art and claimed invention; 3) ease of traversing differences to create invention as a whole; and 4) various secondary considerations. [↑](#footnote-ref-18)
18. 35 U.S.C. § 112(a). [↑](#footnote-ref-19)
19. 35 U.S.C. § 112(b). [↑](#footnote-ref-20)
20. 35 U.S.C. § 101; M.P.E.P. § 2106, *supra* note 3. [↑](#footnote-ref-21)
21. *See* *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (determining invalidity on abstractness but noting the wide breadth of the claims problematic); Joshua A. Kresh, *Patent Eligibility After Mayo: How Did We Get Here and Where Do We Go?*, 22 Fed. Circuit B.J. 521, 527 (2013) (arguing that *Gottschalk v. Benson* was incorrectly decided on abstractness rather than indefiniteness). [↑](#footnote-ref-22)
22. *Mayo*, 556 U.S. at 70. [↑](#footnote-ref-23)
23. *Benson*, 409 U.S. at 67 (holding a method for converting binary-coded-decimals to binary unpatentable). [↑](#footnote-ref-24)
24. *Mayo*, 556 U.S.at 70. [↑](#footnote-ref-25)
25. *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980). [↑](#footnote-ref-26)
26. *Chakrabarty* at 309. [will be *Id.* at 309.] [↑](#footnote-ref-27)
27. *Funk Bros. Seed Co. v. Kalo Inoculant Co*., 333 U.S. 127, 131 (1948). [↑](#footnote-ref-28)
28. *Funk Bros.*, 333 U.S.at 131. *Id.*  [↑](#footnote-ref-29)
29. *Funk Bros.*, 333 U.S.at 131. *Id.*  [↑](#footnote-ref-30)
30. *Chakrabarty*, 447 U.S. at 304. [↑](#footnote-ref-31)
31. 35 U.S.C. § 101. [↑](#footnote-ref-32)
32. Randall Rader, Benjamin Christoff, *Patent Law in a Nutshell* 56 (3rd ed. 2018). [↑](#footnote-ref-33)
33. *See e.g. Alice,* 573 U.S. at 216; *Mayo*, 566 U.S. at 1290; *Berkheimer*, 881 F.3d at 1366;Kathleen Chapman, Esq. & Stephen Ball, Esq*., Challenges with Patenting Software,* Vt. B.J., Winter 2007/2008, at 36 [↑](#footnote-ref-34)
34. *See Diamond v. Diehr;* 450 U.S. 175 (1981) [↑](#footnote-ref-35)
35. *Diehr*, 450 U.S., at 191–92. *Id*. at 191-92 [↑](#footnote-ref-36)
36. *Diehr*, 450 U.S., at 191–92. *Id*. [↑](#footnote-ref-37)
37. *Mayo*, 566 U.S.at 72. [referencing Benson] [↑](#footnote-ref-38)
38. *Mayo*, 566 U.S.at 132. [referencing Diehr] [↑](#footnote-ref-39)
39. *Mayo*, 566 U.S.at 132. [referencing Flook] *Id.* [↑](#footnote-ref-40)
40. *Benson*, 409 U.S. at 64. [↑](#footnote-ref-41)
41. *Benson*, 409 U.S. at 66. *Id.* at 66. [↑](#footnote-ref-42)
42. *Benson* at 66. *Id.* [↑](#footnote-ref-43)
43. *Diehr*, 450 U.S.at 175. [↑](#footnote-ref-44)
44. *Diehr*,450 U.S. at 185. *Id.* at 185. [↑](#footnote-ref-45)
45. *Diehr*, 450 U.S.at 184 (noting several times that the respondents claims involve transforming of raw rubber into a different state). *Id.* at 184. [↑](#footnote-ref-46)
46. *Bilski v. Kappos*, 561 U.S. 593, 603 (2010). [↑](#footnote-ref-47)
47. *Benson*, 409 U.S. at 70; *In re Bilski*, 545 F.3d 943, 955 (Fed. Cir. 2008). [↑](#footnote-ref-48)
48. *In re Bilski*, 545 F.3d at 961. [↑](#footnote-ref-49)
49. *See* *Benson*, 409 U.S. at 70. [↑](#footnote-ref-50)
50. *In re Bilski*, 545 F.3d at 954. [↑](#footnote-ref-51)
51. *Diehr*, 450 U.S. at 184, 187; *In re Bilski*, 545 F.3d at 954. [↑](#footnote-ref-52)
52. *Parker v. Flook*, 437 U.S. 584, 585 (1978). [↑](#footnote-ref-53)
53. *Diehr*, 450 U.S., at 191–92. [↑](#footnote-ref-54)
54. *Benson*, 409 U.S. at 70. [↑](#footnote-ref-55)
55. *In re Bilski*, 545 F.3d at 956. [↑](#footnote-ref-56)
56. *Bilski v. Kappos*, 561 U.S. at 605. [↑](#footnote-ref-57)
57. *CyberSource*, 654 F.3dat 1371. [↑](#footnote-ref-58)
58. Robert Daniel Garza, *Software Patents and Pretrial Dismissal Based on Ineligibility*, 24 Rich. J.L. & Tech. 1, 41, 87 (2018); *See* *Amdocs (Isr.) Ltd. v. Openet Telecomm. Inc.*, 841 F.3d 1288, 1293-94 (Fed. Cir. 2016). [↑](#footnote-ref-59)
59. 35 U.S.C. § 101 [↑](#footnote-ref-60)
60. *Alice*, 573 U.S. at 222. [↑](#footnote-ref-61)
61. Paul R. Gugliuzza, *Quick Decisions in Patent Cases*, 106 Geo. L.J. 619, 622 (2018) [↑](#footnote-ref-62)
62. Kathleen Chapman, Esq. & Stephen Ball, Esq., *Challenges with Patenting Software*, Vt. B.J., Winter 2007/2008, at 36, 37 [↑](#footnote-ref-63)
63. *Diehr*, 450 U.S.at 187; *Benson*, 409 U.S.at 73. [↑](#footnote-ref-64)
64. Lucas S. Osborn, *Intellectual Property Channeling for Digital Works*, 39 Cardozo L. Rev. 1303, 1330 (2018); Kyle J. Trout, Esq., and Justin N. Mullen, KramerAmado, *Preserving The Value Of Medical Device Patents During The Rise Of Three-Dimensional Printing*, Westlaw Journal IP 2013 WL 5808127, at \*4 [↑](#footnote-ref-65)
65. *In re Beauregard*, 53 F.3d 1583, 1584 (Fed. Cir. 1995). [↑](#footnote-ref-66)
66. *See e.g.* *CyberSource*, 654 F.3d at 1373; *SEVEN Networks, LLC v. Google LLC*, No. 2:17-CV-441-JRG, 2018 WL 5263271, at \*30 (E.D. Tex. Oct. 23, 2018). [↑](#footnote-ref-67)
67. *Mayo*, 566 U.S. at 66. [↑](#footnote-ref-68)
68. *See Mayo*, 566 U.S. at 90. [↑](#footnote-ref-69)
69. *Alice,* 573 U.S. at 70. [↑](#footnote-ref-70)
70. *Alice* *Id.* at 217. [↑](#footnote-ref-71)
71. *Alice Id.* at 217. [↑](#footnote-ref-72)
72. *Alice Id.* at 217-18. [↑](#footnote-ref-73)
73. *Alice* *Id.* at 218-21. [↑](#footnote-ref-74)
74. *Alice,* 573 U.S. at 222. [↑](#footnote-ref-75)
75. *Alice* at 225. *Id. at 225.* [↑](#footnote-ref-76)
76. *Alice* at 225. *Id.* [↑](#footnote-ref-77)
77. Jasper L. Tran, Software Patents: *A One-Year Review of Alice v. Cls Bank*, 97 J. Pat. & Trademark Off. Soc'y 532, 540 (2015) [↑](#footnote-ref-78)
78. Jasper L. Tran, Software Patents: *A One-Year Review of Alice v. Cls Bank*, 97 J. Pat. & Trademark Off. Soc'y 532, 540 (2015) [↑](#footnote-ref-79)
79. Austin Donohue, Patent Cases Down by 40% in 2014, BIOTECHNOW (Oct. 17, 2014), http://www.biotechnow.org/public-policy/patently-biotech/2014/10/patent-cases-down-by-40-in-2014. [↑](#footnote-ref-80)
80. *Berkheimer*, 881 F.3d at XX. [↑](#footnote-ref-81)
81. *DDR Holdings*, 773 F.3dat 1245. [↑](#footnote-ref-82)
82. *Core Wireless Licensing S.A.R.L. v. LG Electronics, Inc.*, 880 F.3d 1356 (2018). [↑](#footnote-ref-83)
83. *Berkheimer*, 881 F.3d at XX. [↑](#footnote-ref-84)
84. *Berkheimer* at 1360. [↑](#footnote-ref-85)
85. *Berkheimer* at 1362-63. [↑](#footnote-ref-86)
86. *Berkheimer* at 1364. [↑](#footnote-ref-87)
87. *Berkheimer* at 1360. [↑](#footnote-ref-88)
88. Berkheimer Memorandum, *supra* note 12. [↑](#footnote-ref-89)
89. *Id.* at 1-2. [↑](#footnote-ref-90)
90. *Id.* at 2. [↑](#footnote-ref-91)
91. *Id.* at 3-5. [↑](#footnote-ref-92)
92. *Id.* at 3-4. [↑](#footnote-ref-93)
93. *Id.* at 4. [↑](#footnote-ref-94)
94. M.P.E.P § 2106.05(d)(II). [↑](#footnote-ref-95)
95. *Id.* at 4. [↑](#footnote-ref-96)
96. *Id.* at 4; M.P.E.P. § 2144.03, *supra* note 3. [↑](#footnote-ref-97)
97. https://www.uspto.gov/patent/initiatives/patent-examiner-count-system [↑](#footnote-ref-98)
98. *Benson*, 409 U.S. at 67. [↑](#footnote-ref-99)
99. *Dream Custom Homes, Inc. v. Modern Day Const., Inc.*, 773 F. Supp. 2d 1288, 1307 (M.D. Fla. 2011), aff'd, 476 F. App'x 190 (11th Cir. 2012) [↑](#footnote-ref-100)
100. *CCC Info. Servs., Inc. v. Maclean Hunter Mkt. Reports, Inc.*, 44 F.3d 61, 68 (2d Cir. 1994). [↑](#footnote-ref-101)
101. *Alice*, 573 U.S at 217-22. [↑](#footnote-ref-102)
102. *Bilski v. Kappos*,561 U.S. at XX. [↑](#footnote-ref-103)
103. *Alice*, 573 U.S at XX. [↑](#footnote-ref-104)
104. *Funk Bros.*, 333 U.S.at XX. [↑](#footnote-ref-105)
105. *Ariosa Diagnostics Inc. v. Sequenom, Inc.*, 788 F.3d 1372 (Fed. Cir. 2015). [↑](#footnote-ref-106)
106. *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1335 (Fed. Cir. 2012) (Plager, J., dissenting). [↑](#footnote-ref-107)
107. 35 U.S.C. § 101. [↑](#footnote-ref-108)
108. *Benson*, 409 U.S. at 67. [↑](#footnote-ref-109)
109. Joshua A. Kresh, *Patent Eligibility After Mayo: How Did We Get Here and Where Do We Go?*, 22 Fed. Circuit B.J. 521, 527 (2013). [↑](#footnote-ref-110)
110. *Planet Bingo, LLC v. VKGS LLC*, 576 Fed.Appx. 1005 (Fed. Cir. 2014). [↑](#footnote-ref-111)
111. *Planet Bingo*, at 1008. *Id.* at 1008 [↑](#footnote-ref-112)
112. *Id.* [↑](#footnote-ref-113)
113. *Id*. [↑](#footnote-ref-114)