

August 20, 2018

DEPARTMENT OF COMMERCE

Patent and Trademark Office

[Docket No. [PTO-P-2018-0033](#)]

Response to Request for Comments on the Standard for When a Claim Element is Well-Understood, Routine, Conventional for Purposes of Subject Matter Eligibility

Via email: Eligibility2018@uspto.gov

Dear Sir:

Thank you for this [opportunity](#) to inform the policy-making process.

Dealing with issues of § 101-eligibility during prosecution is without doubt an obstacle course during prosecution. The CAFC decision in *Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018) makes navigating this course somewhat more manageable, but this decision and new USPTO procedures alone will hardly render § 101-eligibility determinations completely rational and predictable.

Thanks to the plethora of somewhat confusing and sometimes contradictory holdings and dicta, one begins to feel that something like the following traditional Rabbinic Jewish Biblical exegetical techniques (ס"ד פז)¹ are needed in order to parse out the meaning of the *Berkheimer* decision in the context of § 101-eligibility law:

- פשוט (pshut: simple, straight) – a thorough and intensive reading and literal analysis of the text of the *Berkheimer* decision,
- רמז (remez: hints) – analyzing the *Berkheimer* decision for higher meaning relative to the epistemics¹ or scientific study of invention in order to connect the question of claim-eligibility to both the τέχνη² and also the φρόνησις³ that together are embodied in the invention that is being claimed,
- שאל (drash: inquiry) – comparative analysis of the *Berkheimer* decision through related decisions, and
- סוד (sod: secret, mystery) – applying epistemology or the theory of knowledge to the *Berkheimer* decision.

I may have overthought this [Request for Comments](#) because I have become obsessed with § 101-eligibility doctrine. In *Interval Licensing LLC v. AOL, Inc., Apple, Inc., Google LLC, Yahoo!, Inc.* (Fed. Cir., July 20, 2018),⁴ Judge Plager implicitly tells us that the US patent system is on the edge of an abyss.

1 *PARDES*.

2 *Tekhne*: craftsmanship.

3 *Phronesis*: practical non-technological and technological wisdom, see endnote xi.

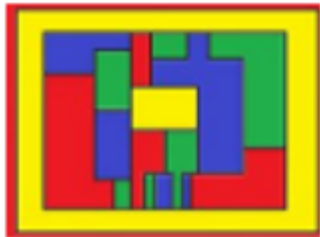
4 All US patent system stakeholders should read this decision. Judge Plager's concurrence-in-part and dissent-in-part describes the abyss into which the US patent system is falling.

Today we are called upon to decide the fate of some inventor's efforts, whether for good or ill, on the basis of criteria that provide no insight into whether the invention is good or ill. Given the current state of the law regarding what inventions are patent eligible, and in light of our governing precedents, I concur in the carefully reasoned opinion by my colleagues in the majority, even though the state of the law is such as to give little confidence that the outcome is necessarily correct. The law, as I shall explain, renders it near impossible to know with any certainty whether the invention is or is not patent eligible. Accordingly, I also respectfully dissent from our court's continued application of this incoherent body of doctrine.

At present I only see one way to avoid the abyss: to make § 101-eligibility doctrine coherent. Incorporating the *Berkheimer* decision into USPTO guidance is a good place to start.

Sincerely,

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PS. This email is attached in a PDF file in case the appearance in the email is too garbled to be comprehensible.

Response to Request for Comments on the Standard for When a Claim Element is Well-Understood, Routine, Conventional for Purposes of Subject Matter Eligibility

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Introduction

Since the passage of the [Patent Act of 1952](#), Congress has enacted four more major “rationalizations” of the US patent system:

- [Bayh-Dole Act of 1980](#),
- [Federal Courts Improvement Act of 1982](#),
- [Uruguay Round Agreements Act of 1994](#), and
- [Leahy-Smith America Invents Act \(AIA\) of 2011](#)

as well as tweaks, small changes, and minor modifications. All such legislation is meant to improve the US patent system. Yet such legislative improvements along with subsequent judicial decisions almost invariably seem to render US patent law and system more incoherent and weaker from almost any point of view.

Some of the problem come from the nature of the technological beast, which charges forward ever more rapidly while patent law professionals drop further behind as they become more and more removed from their technological training. An inventor may have growing difficulty in explaining a new invention and its underlying technology to a patent practitioner, who may himself have growing difficulty in explaining the invention and technology to an examiner, to a magistrate or to a judge.

Perhaps a greater but less obvious source of patent system problems comes from the growing temporal philosophical distance between today’s patent system and the late enlightenment legal philosophical environment in which the modern patent system was born.

Terminology has become confusing and often undefined (e.g, “abstract ideaⁱⁱ” or “significantly more” from [MPEP 2106 Patent Subject Matter Eligibility \[R-08.2017\]](#)ⁱⁱⁱ), and concepts are introduced that do not belong in the US patent system and are confusing. The boundaries between § 101-eligibility and patentability often seem unclear. Factual investigation, which the CAFC found to necessary in *Berkheimer v. HP Inc.*, 881 F.3d 1360 (Fed. Cir. 2018),^{iv} may clarify aspects of *Alice/Mayo* two-part test,^v but in many ways the discussion in of “well-understood, routine, conventional activity” is almost as confusing and ill-defined as “abstract idea” or “significantly more.” See [MPEP 2106.05\(d\) Well-Understood, Routine, Conventional Activity \[R-08.2017\]](#), which is a problematic subsection of an MPEP section that piles enigma upon quandary. To be fair to the writers of MPEP 2106, they had to deal with court decisions that were at best contradictory, conflicted, or simply totally wrong. *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 113 USPQ2d 1097 (Fed. Cir. 2014) and *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1315, 120 USPQ2d 1091, 1102-03 (Fed. Cir. 2016) provide excellent examples of the sort of judicial error^{vi} that the MPEP writers faced and shows that excellent lawyering trumps consistent decision making by the courts.

The following sections try to provide useful comments in response to the USPTO’s ongoing valiant effort to render § 101-eligibility doctrine coherent. The first section following is undeniably painful, but its contents needs to be covered somewhere.

1. Federal Circuit Decision in Berkheimer

When the phrase “directed to” in the context of claim, it’s meaning is almost invariably unclear or ambiguous, and the MPEP seems to use the phrase in a number of different ways.

[MPEP 2106.04 Eligibility Step 2: Whether a Claim is Directed to a Judicial Exception \[R-08.2017\]](#) tells us.

A claim is **directed** to a judicial exception when a law of nature, a natural phenomenon, or an abstract idea is **recited** (i.e., **set forth** or **described**) in the claim. While the terms “set forth” and “describe” are thus both equated with “recite”, their different language is intended to indicate that there are different ways in which an exception can be recited in a claim. For instance, the claims in *Diehr* set forth a mathematical equation in the repetitively calculating step, the claims in *Mayo* set forth laws of nature in the wherein clause, meaning that the claims in those cases contained discrete claim language that was identifiable as a judicial exception. The claims in *Alice Corp.*, however, described the concept of intermediated settlement without ever explicitly using the words “intermediated” or “settlement.”

SCOTUS tells the USPTO and US courts the following in *Diamond v. Diehr*, 450 U.S. 175 (1981).

While a mathematical formula, like a law of nature, cannot be the subject of a patent, *cf. Gottschalk v. Benson*, 409 U. S. 63; *Parker v. Flook*, 437 U. S. 54, respondents do not seek to patent a mathematical formula, but instead seek protection for a process of curing synthetic rubber. Although their process employs a well-known mathematical equation, they do not seek to preempt the use of that equation, except in conjunction with all of the other steps in their claimed process. A claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer. **Respondents' claims must be considered as a whole, it being inappropriate to dissect the claims into old and new elements and then to ignore the presence of the old elements in the analysis.** The questions of whether a particular invention meets the "novelty" requirements of 35 U.S.C. § 102 or the "nonobviousness" requirements of § 103 do not affect the determination of whether the invention falls into a category of subject matter that is eligible for patent protection under § 101. Pp. 450 U. S. 185-191.

Yet dissecting claims according to various schemes has been around for a long time.^{vii} Possibly because of the misleading character of the phrase “directed to” used in the *Alice/Mayo* two-part test, MPEP 2106 has the feel of judicially-forbidden claim dissection.

Because a claim defines the metes and bounds of the subject matter protected within a patent grant just as a patented land claim defined by a surveyor or a patented mine claim defined by a prospector, a patent claim defines a protected territory or area that the inventor has claimed with human knowledge. Because the terminology of the patent system is so rooted in surveying and geography, it makes sense

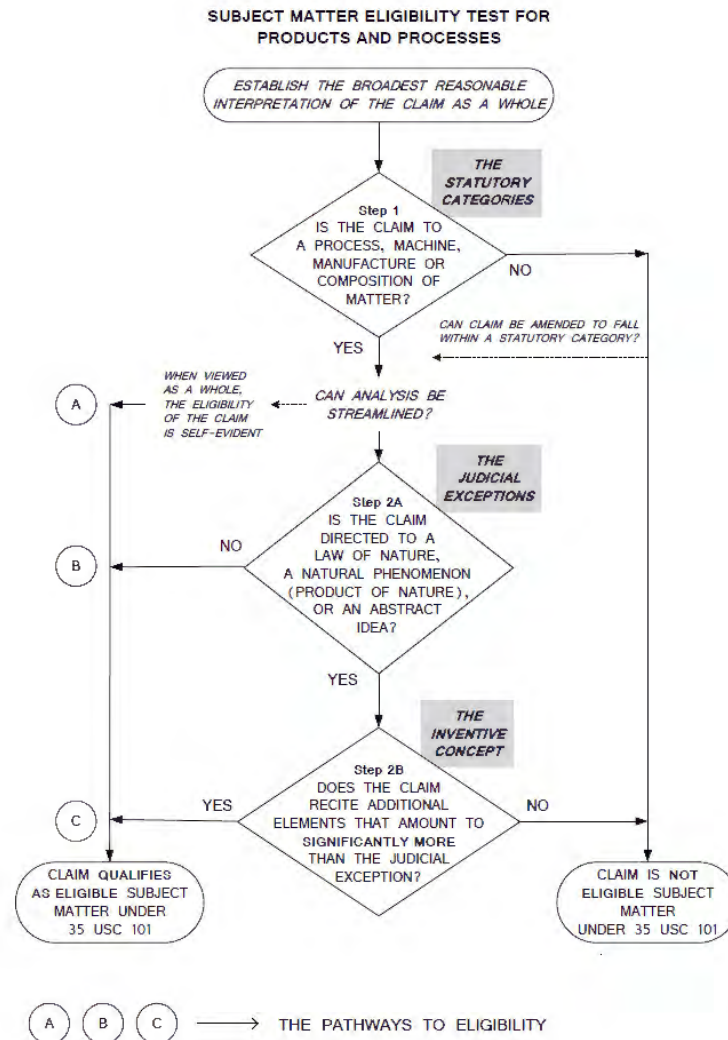
to assert that the metes and bounds of a claim specify a protected epistemic geography or epistemography.⁵ (Each claim has its own epistemography.)⁶

When a claim is directed to a judicial exception, that judicial exception is found within the epistemography of the claim probably along with other elements. Because the language of epistemography works equally well both for § 101-eligibility and also for patentability and because the epistemography language differs little from fifth grade geography language, this language is superior to the Alice/Mayo two-part test language albeit completely equivalent. Because SCOTUS seems to have confused itself with the Alice/Mayo two-part test, all the lower courts and everyone else is confused.

The *Berkheimer* Claims

According to the Berkheimer decision the self-evidently § 101-ineligible claims are directed to abstract ideas. Here is the MPEP flowchart.⁷

-
- 5 The word epistemography is a neologism that may be helpful for rational legal analysis of issues of § 101-eligibility and of patentability.
 - 6 Just as accounting has its own specialized vocabulary that must be introduced in court when a legal controversy pertains to financial issues. Likewise a specialized vocabulary of the theory of knowledge should probably be introduced when a legal controversy pertains to Intellectual Property. Epistemography, which is the theory or philosophy of knowledge provides that vocabulary. Epistemics, which is the scientific study of the practice of science or of engineering, is intertwined with epistemology. I am proposing epistemography as an area of applied epistemology.
 - 7 This procedure of two-part analysis gives the Alice/Mayo two-part test the impression of an impermissible dissection of the claim. While the Alice/Mayo two-part test and mapping out the epistemography of a claim are fully equivalent, creating an epistemography for the claim feels much more like treating the claim as a whole. Note that MPEP (most of the time) numbers the steps of the Alice/Mayo two-part test differently from the numbering of the steps in the *Alice Corp. Pty. Ltd. v. CLS Bank Intern.*, 134 S. Ct. 2347. Here is the MPEP graphic.



[Note that MPEP Step 2A is Step 1 of the *Alice* decision while MPEP Step 2B is Step 2 of the *Alice* decision.]

This text precedes the MPEP flowchart.

The flowchart also shows three pathways (A, B, and C) to eligibility:

- Pathway A: Claims taken as a whole that fall within a statutory category (Step 1: YES) and, which may or may not recite a judicial exception, but whose eligibility is self-evident can be found eligible at Pathway A using a streamlined analysis. See [MPEP § 2106.06](#) for more information on this pathway and on self-evident eligibility.
- Pathway B: Claims taken as a whole that fall within a statutory category (Step 1: YES) and are not directed to a judicial exception (Step 2A: NO) are eligible at Pathway B. These claims do not need to go to Step 2B. See [MPEP § 2106.04](#) for more information about this pathway and Step 2A.

- Pathway C: Claims taken as a whole that fall within a statutory category (Step 1: YES), are directed to a judicial exception (Step 2A: YES), and recite **additional** elements either individually or in an **ordered** combination that amount to significantly more than the judicial exception (Step 2B: YES) are eligible at Pathway C. See [MPEP § 2106.05](#) for more information about this pathway and Step 2B.

The CAFC held in *Berkheimer* that factual analysis was required to determine whether the epistemographies of the Berkheimer Claims 4-7 contained only:

- at least one abstract idea; and
- well-understood, routine, conventional activity.^{8,viii}

The above epistemography statement can also be somewhat awkwardly formulated in the terminology of the Alice/Mayo two-part test as follows.

The CAFC held in *Berkheimer* that factual analysis is required to determine whether each of the following claims is § 101-ineligible because an additional recited element of each claim might not be well-understood, routine, conventional activity and thus might represent something significantly more that would render the claim § 101-eligible.

8 SCOTUS introduced the phrase “well-understood, routine, conventional activity” in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 67, 101 USPQ2d 1961, 1964 (2010) and thereby broke the US patent system. The phrase is an outrageously ill-considered. A well-understood limitation could be substantial and definitely “significantly more.” The word routine in software contexts can be a synonym for subroutine, which is not the intended meaning. A claim might recite a conventional feature and not recite a conventional activity. It would be preferable to substitute “conventional element” or (even better) “conventionalization” for “well-understood, routine, conventional activity.”

Claims 4–7, in contrast, contain limitations directed to the arguably unconventional inventive concept described in the specification. Claim 4 recites “storing a reconciled object structure in the archive without substantial redundancy.” The specification states that storing object structures in the archive without substantial redundancy improves system operating efficiency and reduces storage costs. ’713 patent at 16:52–58. It also states that known asset management systems did not archive documents in this manner. *Id.* at 2:22–26. Claim 5 depends on claim 4 and further recites “selectively editing an object structure, linked to other structures to thereby effect a one-to-many change in a plurality of archived items.” The specification states one-to-many editing substantially reduces effort needed to update files because a single edit can update every document in the archive linked to that object structure. *Id.* at 16:58–60. This one-to-many functionality is more than “editing data in a straightforward copy-and-paste fashion,” as characterized by the district court. *Berkheimer*, 224 F. Supp. 3d at 645. According to the specification, conventional digital asset management systems cannot perform one-to-many editing because they store documents with numerous instances of redundant elements, rather than eliminate redundancies through the storage of linked object structures. ’713 patent at 1:22–55, 4:4–9, 16:52–60.

Claims 6–7 depend from claim 5 and accordingly contain the same limitations. These claims recite a specific method of archiving that, according to the specification, provides benefits that improve computer functionality.

HP argues that redundancy and efficiency are considerations in any archival system, including paper-based systems. The district court agreed. *Berkheimer*, 224 F. Supp. 3d at 647. At this stage of the case, however, there is at least a genuine issue of material fact in light of the specification regarding whether claims 4–7 archive documents in an inventive manner that improves these aspects of the disclosed archival system. Whether claims 4–7 perform well-understood, routine, and conventional activities to a skilled artisan is a genuine issue of material fact making summary judgment inappropriate with respect to these claims.

We do not decide today that claims 4–7 are patent eligible under § 101. We only decide that on this record summary judgment was improper, given the fact questions created by the specification’s disclosure.

The epistemic regions within the epistemography of the *Berkheimer* Claims 1-3 consist of abstract ideas, which in the (slightly extended) Kantian framework could be called *a posteriori*, analytic, and effectively calculable. (If endnote v has not been read, it is now time to do so.)

Here are claims 1, 4–7 from [US patent no. 7,447,713 \(Berkheimer, System and method for archiving and outputting documents or graphical items\)](#). Claims 4–7 at least should have been included in the text of the CAFC *Berkheimer* decision.

1. A method of archiving an item comprising in a computer processing system:

presenting the item to a parser;

parsing the item into a plurality of multi-part object structures wherein portions of the structures have searchable information tags associated therewith;

evaluating the object structures in accordance with object structures previously stored in an archive;

presenting an evaluated object structure for manual reconciliation at least where there is a predetermined variance between the object and at least one of a predetermined standard and a user defined rule.

4. The method as in claim 1 which includes storing a reconciled object structure in the archive without substantial redundancy.

5. The method as in claim 4 which includes selectively editing an object structure, linked to other structures to thereby effect a one-to-many change in a plurality of archived items.

6. The method as in claim 5 which includes compiling an item to be output from the archive, wherein at least one object-type structure of the item has been edited during the one-to-many change and wherein the compiled item includes a plurality of linked object-type structures converted into a predetermined output file format.

7. The method as in claim 6 which includes compiling a plurality of items wherein the at least one object-type structure had been linked in the archive to members of the plurality.

The Court first determined that parsing and comparing objects are abstract ideas.⁹

An applied mathematician would probably consider these operations to belong to formal language theory, which is an area within applied mathematics. Calling these operations abstract ideas is somewhat confusing because an applied mathematician or computer scientist probably believes himself to work with applied ideas and not with abstract ideas, which either of the two preceding specialists will consider the province of the abstract or pure mathematician.

There is a more serious terminological issue. An applied mathematical operation seems more like well-understood, routine, conventional activity than like an abstract idea. Often differentiating a well-understood, routine, conventional activity from an abstract idea seems mostly a matter of perspective.

9 Why aren't parsing and comparing objects well-understood, routine, and conventional activities. If these claims recited unique in-memory structures associated with parsing or comparing object, parsing or comparing objects might even constitute much more significant limitations. Someone might make such a claim in a patent application in the future. Parsing is an area of active research. Often software development work with a Virtual Machine (VM) like the JVM (Java Virtual Machine), which can be considered a well-defined software computer technology (and in-memory data structure) that like a database can be improved, includes some degree of parsing. (In the past a database would typically be found in secondary memory storage like a disk system specially formatted to optimize database access. Nowadays, a database can be maintained in a RAM disk, which can be a form of persistent storage.) Virtual machines structures like database structures have been around since the 60s. The Oracle JRockit JVM generates code via JIT (Just In Time) compilation and optimizes the executable code. One can foresee that a novel aspect of a JVM qua in-memory clearly defined structure or object might represent a claimable invention. It might be possible to obtain patent protection for some inventions related to business procedures like settlement (*Alice*) by claiming a novel aspect of in-memory clearly defined structure or object. Claims to trading-related inventions, e.g. those that were the subject of *Bilski v. Kappos* - 130 S. Ct. 3218 (2010), might be § 101-eligible if they are written like game claims in which the trader plays a game against the market.

Maybe in a device or manufacture claim, the epistemography of the claim encompasses an element that could be considered simply an abstract idea, but in a method claim that same element could be a well-understood, routine, conventional activity.

The idea of itself (abstract idea) in *Rubber-Tip Eraser* was “joining by insertion.”¹⁰ In a method claim for making a rubber-tipped pencil, one might easily consider “joining by insertion” to constitute a well-understood, routine, conventional activity.

This sort of fuzziness is even worse if one considers “doing it on computer” to be an example of “a well-understood, routine, conventional activity,” which *prima facie* seems not to be an abstract idea. Running a program on a processor seems in many ways analogous to reading text on a page. One can even say that the processor (autonomously) reads the instructions of the program. Maybe a processor and memory serve so to speak in many cases as an active substrate comparable to the (passive) substrate of Printed Matter Doctrine. Memory that contains instructions in one point of view is analogous to a page containing text.

This sort of conflict of legal jargon with mathematical jargon^{ix} as well as general fuzziness constitute reasons for the MPEP to adopt the simplified and clearly explained Kantian terminology of endnote v with extensions from endnote vi when the MPEP discusses the abstract idea judicial exception. Ideas or concepts of mathematics, which are abstract ideas to a District Court or to a CAFC judge in this terminology are *a priori* if postulates and are analytic (and *a posteriori*) if theorems, formulas, or operations deriving from postulates or from theorems. A simplified Kantian Linnaeus-like classification of abstract ideas – if used in the MPEP – would be helpful to epistemologists, patent practitioners, inventors, scientists, and artisans in understanding what the courts are saying about § 101-eligibility and how they should apply the judicial decisions as they pursue their activities. Such a classification scheme would not create dreaded bright lines that would constitute a problem as technology develops and is completely compatible with the Alice/Mayo two-part test.

In the *Berkheimer* decision the Court points out the following and applies it to the structure of claim 4.

Whether a particular technology is well-understood, routine, and conventional goes beyond what was simply known in the prior art. The mere fact that something is disclosed in a piece of prior art, for example, does not mean it was well-understood, routine, and conventional.

Once the factual determination is made, we could draw an epistemography for the claim. The four steps of Claim 1 could be colored shades of red (for judicial exceptions like abstract idea, mental step, pencil-and-paper calculation, conventional activity, etc.), and they could overlap as the reconciled object structure is created. Then after the factual determination on the limitation of Claim 4 is carried out, we could add an epistemic region to the epistemography that could be a shade of red if the limitation is simply a conventionalization and blue if there is “significantly more,” which would be the creation of in-memory structured data. The creation of an in-memory structured data is known to be *a posteriori* synthetic knowledge. (See endnote x from the section

10 Kant would probably describe this idea as *a posteriori* and analytic. If something has a hole, another thing can be joined to it by insertion.

entitled The Gulack Claims – we are getting a little ahead of ourselves. For the present we can just consider the classification of this epistemic region to be correct.)

In the second case, there would be some overlap of the five recited items to create a purple region that represented a combination of *a posteriori* synthetic and analytic knowledge. We don't yet know whether the epistemography of the claim involves novel non-obvious *a posteriori* synthetic structure that would make the claim patentable, but finding a *a posteriori* synthetic structure (the “significantly more” of the Alice-Mayo two-part test step 2B), makes the claim § 101-eligible, and now the claim is ready for patentability analysis.

The Gulack Claims

The CAFC has acknowledged that a memory (a device or a manufacture) containing a defined data structure as a limitation or as an element of a limitation may be § 101-eligible and patentable. See *In re Lowry*, U.S. Court of Appeals Federal Circuit, 32 F.3d 1579, 32 USPQ2d 1031 (August 26, 1994).^x (Endnote x is important for trying to explain why an in-memory data structure might be § 101-eligible, but this endnote also contains a lot of material that might be distracting on first reading of this response document.)

In re Lowry significantly references *In re Gulack*, 703 F.2d 1381, 217 USPQ 401 (Fed. Cir. 1983), which provides a major precedent supporting the patentability of CRM (Content-Readable Memory) or Beauregard claims. (See [MPEP 2111.05 Functional and Nonfunctional Descriptive Material \[R-08.2017\]](#).) Yet after determining exactly to what the claims of [US Patent no. 4,416,633 \(Gulack, Educational and recreational mathematical device in the form of a band, ring or concentric rings\)](#) are directed, it is not impossible that we will find:

- that the Alice/Mayo two-part test followed by patentability analysis will find the claim unpatentable or
- that the epistemography of the claim will show neither § 101-eligibility nor patentability.

We should apply these two formalisms as a sanity check.

Here is claim 1, which is the sole independent claim of patent.

1. An educational and recreational mathematical device comprising at least one band which is endless or adapted to have ends thereof fastened to form an endless band and a plurality of individual digits imprinted on the band at regularly spaced intervals, the digits when all read consecutively clockwise as a number constituting a quotient obtained by dividing a number constituted of $(P-1)/n$ nines, in which P is a prime number greater than 5 and n is an integer at least 1, by P and adding to the lefthand end of said quotient any number of zeros necessary to increase the number of digits in said quotient to $(P-1)/n$, n being so selected that $(P-1)/n$ nines is the minimum number of nines divisible by P so that said quotient is an integral number.

Here is the Alice/Mayo two-part test analysis.

- Step 1. Is a process, machine, manufacture, or composition of matter claimed? Yes – an educational and recreational mathematical device.
- Step 2A. Is the claim directed to a law of nature, a natural phenomenon (product of nature), or an abstract idea? Yes – the claim is directed to a simple mathematical result, which is used to place numeric text on the band, which comes from algebraic number theory, and which is thus an abstract or pure idea. In the simplified Kantian framework of endnote v, the claim is directed at least in part to pure analytic *a posteriori* knowledge.^{xi}
- Step 2B. Does the claim recite additional elements that amount to significantly more that will render the claim § 101-eligible?

Obviously the claim is recites significantly more than a judicial exception or conventionalization because it recites a band.

One could also say that the epistemography of the claim includes *a posteriori* synthetic knowledge, which should render the claim § 101-eligible.

Now we become confused because the *Prometheus* method claims adjudicated in *Mayo v. Prometheus*, 132 S. Ct. 1289 (2012),^{xii} recited a medical treatment within the method claim steps. That medical treatment without doubt constitutes something “significantly more.”

Why weren’t the *Prometheus* claims § 101-eligible according to the Alice-Mayo two-part test?

The *Prometheus* Claims

Below is *Prometheus* claim 1 of US patent no. [6,355,623 \(Seidman, Method of treating IBD/Crohn's disease and related conditions wherein drug metabolite levels in host blood cells determine subsequent dosage\)](#).

1. A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:

(a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder; and

(b) determining the level of 6-thioguanine in said subject having said immune-mediated gastrointestinal disorder,

wherein the level of 6-thioguanine less than about 230 pmol per 8.times.10.sup.8 red blood cells indicates a need to increase the amount of said drug subsequently administered to said subject and

wherein the level of 6-thioguanine greater than about 400 pmol per 8.times.10.sup.8 red blood cells indicates a need to decrease the amount of said drug subsequently administered to said subject.

Step (a) comes from prior art disclosure found in [US patent no. 5,733,915 \(Sandborn, Use of azathioprine to treat Crohn's disease\)](#). If the above Seidman '623 claim had been staked out in Sandborn '915 when the treatment was new, the claim would almost certainly have been both § 101-eligible and also patentable.

When we apply the Alice/Mayo two-part test, we find that the claim belongs to a statutory category, but we also find that it is directed to a natural phenomenon of the patient's level of 6-thioguanine. When we move on to step 2B we see that the epistemography of the claim also includes a genuine medical treatment for Crohn's disease and also the well-understood, routine, conventional activity of adjusting treatment to patient response. Not only is there something "significantly" more in the Claim, but there is, in fact, a lot more.

Here is the key point from the syllabus of SCOTUS' decision.

Held: Prometheus' process is not patent eligible. Pp. 8–24.

(a) Because the laws of nature recited by Prometheus' patent claims—the relationships between concentrations of certain metabolites in the blood and the likelihood that a thiopurine drug dosage will prove ineffective or cause harm—are not themselves patentable, the claimed processes are not patentable unless they have additional features that provide practical assurance that the processes are genuine applications of those laws rather than drafting efforts designed to monopolize the correlations. The three additional steps in the claimed processes here are not themselves natural laws but neither are they sufficient to transform the nature of the claims. The "administering" step simply identifies a group of people who will be interested in the correlations, namely, doctors who used thiopurine drugs to treat patients suffering from autoimmune disorders. Doctors had been using these drugs for this purpose long before these patents existed. And a "prohibition against patenting abstract ideas 'cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.'" *Bilski, supra*, at _____. The "wherein" clauses simply tell a doctor about the relevant natural laws, adding, at most, a suggestion that they should consider the test results when making their treatment decisions. The "determining" step tells a doctor to measure patients' metabolite levels, through whatever process the doctor wishes to use. Because methods for making such determinations were well known in the art, this step simply tells doctors to engage in well-understood, routine, conventional activity previously engaged in by scientists in the field. Such

activity is normally not sufficient to transform an unpatentable law of nature into a patent-eligible application of such a law. *Parker v. Flook*, 437 U. S. 584, 590. Finally, considering the three steps as an ordered combination adds nothing to the laws of nature that is not already present when the steps are considered separately. Pp. 8–11.

Here is the decision.

In consequence, we must hesitate before departing from established general legal rules lest a new protective rule that seems to suit the needs of one field produce unforeseen results in another. And we must recognize the role of Congress in crafting more finely tailored rules where necessary. Cf. 35 U. S. C. §§161–164 (special rules for plant patents). We need not determine here whether, from a policy perspective, increased protection for discoveries of diagnostic laws of nature is desirable.

* * *

For these reasons, we conclude that the patent claims at issue here effectively claim the underlying laws of nature themselves. The claims are consequently invalid. And the Federal Circuit’s judgment is reversed.

It is so ordered.

SCOTUS goofed. By SCOTUS’ Alice/Mayo two-part test, which in theory is partially based on this erroneous decision, the Prometheus claims were certainly § 101-eligible, and SCOTUS should have proceeded further to find the claims unpatentable (as this document will explain below).

The *Rubber-Tip Eraser* Claim

SCOTUS made a major goof in *Mayo* probably because too many patent law professionals have been overreading *Rubber-Tip Pencil Co. v. Howard*, 87 U.S. 498 (1874). Analyzing the *Rubber-Tip Pencil* decision can help both to explain the error of *Mayo v. Prometheus* and also to demonstrate that the Alice/Mayo two-part test is basically correct albeit overly complex.

The patent of the *Rubber-Tip Pencil* decision is [US patent no. 66,938 \(Blair, Rubber Head for Lead-Pencils\)](#), which was owned Rubber-Tip Pencil Co. Blair ‘938 like Gulack ‘633 is also a manufacture or device claim. Here is the conclusion of the decision.

Certainly words could hardly have been chosen to indicate more clearly that a patent was not asked for the external form, and it is very evident that the essential element of the invention as understood by the patentee was the facility provided for attaching the head to the pencil. The prominent idea in the mind of the inventor clearly was the form of the attachment, not of the head. If additional proof of this is required, it may be found in the further statement in the specifications, which locates the head for use at or near the end of the pencil, and so made as to surround the part on which it is to be placed and be held thereon by the inherent elasticity of the material of which it is to be composed. If intended for use at any other place than on the end of the pencil, the projections could not be essential, as any form that would surround the part would present the requisite erasive surface.

Again, the head is to have in it longitudinally, a socket to receive one end of a lead pencil or a tenon extending from it. This socket is to be cylindrical or of any other proper shape. Usually, the inventor says, he made it so as to extend part way through the head, but if desirable, it might be extended entirely through. It must be within one end, but any particular location at the end is not made essential. This clearly is no more than providing that the piece of rubber to be used must have an opening leading from one end into or through it. This opening may be of any form and of any extent longitudinally. The form, therefore, of the inside cavity is no more the subject of the patent than the external shape. Any piece of rubber with a hole in it is all that is required thus far to meet the calls of the specifications, and thus far there is nothing new, therefore, in the invention. Both the outside and inside may be made of any form which will accommodate the parties desiring the use.

But the cavity must be made smaller than the pencil and so constructed as to encompass its sides and be held thereon by the inherent elasticity of the rubber. This adds nothing to the patentable character of the invention. Everybody knew when the patent was applied for that if a solid substance was inserted into a cavity in a piece of rubber smaller than itself, the rubber would cling to it. The small opening in the piece of rubber not limited in form or shape, was not patentable, neither was the elasticity of the rubber. What, therefore, is left for this patentee but the idea that if a pencil is inserted into a cavity in a piece of rubber smaller than itself the rubber will attach itself to the pencil, and when so attached become convenient for use as an eraser?

An idea of itself is not patentable, but a new device by which it may be made practically useful is. The idea of this patentee was a good one, but his device to give it effect, though useful, was not new. Consequently he took nothing by his patent.

Unfortunately, the claim of US patent no. 66,938 is not a modern format claim.

I claim as a new article of manufacture—
An elastic erasive pencil-head, made substantially in manner as described.

SCOTUS seems to be judging a claim, which in modern format might correspond to something like one of the following.¹¹

An elastic erasive pencil-head comprising:

11 § 101-eligibility does not depend upon claim form, and we must look beyond the form of claim in order to determine the epistemic region or epistemography that it protects.

an India rubber having:

a solid pencil-head shape into which a circular socket has been substantially drilled so that a lead-pencil can be joined to the elastic erasive pencil-head by inserting one end of the lead-pencil into the socket in an elastic interference fit.

A method for joining a lead-pencil to an elastic erasive pencil-head, the method comprising the steps of:

obtaining an India rubber;

forming the India rubber into a solid pencil-head shape;

substantially drilling a socket so that a lead-pencil can be joined to the India rubber by means of insertion into the socket in an elastic interference fit;

obtaining a lead-pencil having:

a blunt end; and

inserting the blunt end of the lead-pencil into the India rubber's socket in order to join the lead-pencil to the India rubber by means of an elastic interference fit.

An elastic erasive pencil-head for a lead-pencil having:

a straight uniform elongated convex polygon tube shape;

a first tube-terminal end; and

a second tube-terminal end, which can be sharpened to a lead-pencil point,

the elastic erasive pencil-head comprising:

an India rubber having:

a three-dimensional solid pencil-head shape into which a circular socket has been substantially drilled so that the first-tube terminal end can be joined to the elastic erasive pencil-head by means of insertion into the circular socket in an elastic interference fit, and

a straight uniform elongated tube shape having a straight uniform elongated curved side being defined to be a limiting shape of a geometric sequence of straight uniform elongated convex polygon tube shapes, each successive sequence member of said sequence being a straight uniform elongated convex polygon tube shape having more polygon sides than an immediately preceding member.^{xiii}

While the proposed modernized Blair '938 claims are directed to the idea of itself (idea *per se* or abstract idea) of joining by insertion,¹² they also recite a lead-pencil and an Indian rubber. While one could point out that neither a lead-pencil nor an India rubber was novel when the Blair application was filed, novelty and non-obviousness determination is part of patentability analysis and not a part of §

12 In the method claim "joining by insertion" should probably be considered "well-understood, routine, conventional activity."

101-eligibility determination.^{xiv} In modern terminology 1874 SCOTUS found the claim § 101-eligible but not patentable, for Blair’s “device to give [his idea] effect, though useful, was not new”

If we apply the Alice/Mayo two-part test to any proposed modern-form Blair ‘938 claim, once again we find a claim to a statutory category, which in this case is an article of manufacture or a method. If the Alice/Mayo two-part test had existed in 1874, SCOTUS would have found at Step 2A that the claim was directed somewhat implicitly to an idea of itself (an idea *per se* or an abstract idea) which is “joining by insertion”¹³ while at Step 2B 1874 SCOTUS would have found the recited lead-pencil and the recited India rubber definitely to have constituted something “significantly more” that renders any of the above proposed modern-format claims to be § 101-eligible.

It should now be completely clear that 1874 SCOTUS was complaining that the idea of itself created a distraction from the utter lack of novelty in Blair’s invention. 1874 SCOTUS was not asserting that a claim to an idea of itself is § 101-ineligible.¹⁴

Visualizing Epistemic Regions within Epistemography of a Claim

Now that we understand that SCOTUS goofed and why SCOTUS goofed, we can apply the Alice-Mayo two-part test properly to Gulack’s claim.

At step 1 we find that Claim 1 of Gulack ‘633 claims a statutory device.

At step 2A we find the epistemography of this claim contains a simple mathematical procedure, which is used to place numeric text on the band and which comes from algebraic number theory, which comprises abstract or pure ideas and analytical derivations from these ideas.

At step 2B we also find within the epistemography a band formed into a Möbius strip onto which numbers derived via the above mathematical procedure have been affixed. Obviously there is something “significantly more” that renders Claim 1 of Gulack ‘633 § 101-eligible.

Now let’s actually draw some epistemographies associated with claims and identify epistemic regions within the an epistemography of each claim.

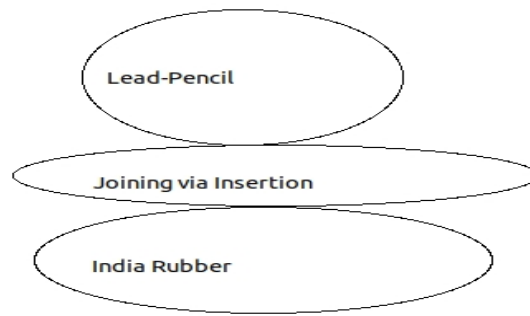
[Epistemologies have no statutory or judicial basis. They are merely helpful for comprehension like claim charts in analyzing support for a patent claim in a written description or like Feynman diagrams in analyzing a particle physics reaction.]

Here is the epistemography that applies to the three proposed modern Blair ‘938 claim.¹⁵

13 In an alternate perspective “joining by insertion” might like “adjusting treatment to patient response” represent “well-understood, routine, conventional activity.” In the case of the two device claims, “joining by insertion” is recited as a claim element that characterizes a limitation and not as an explicit limitation.

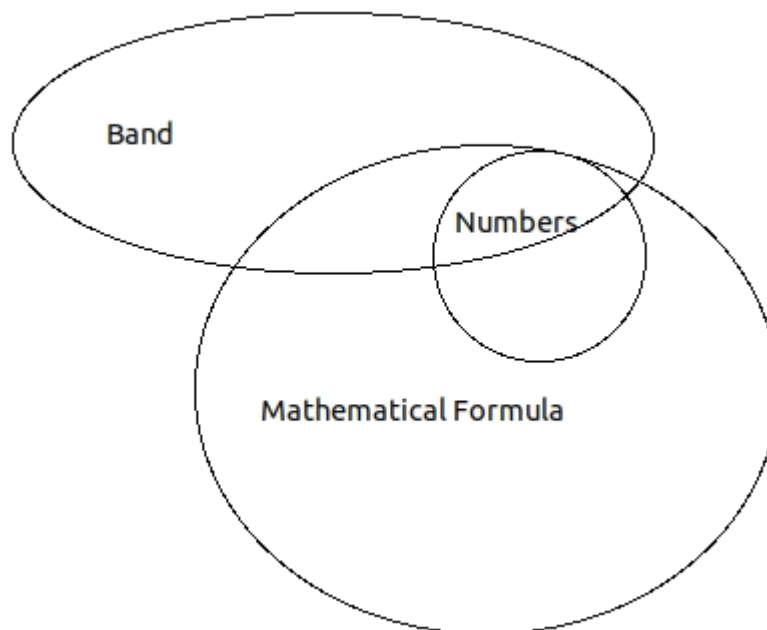
14 This statement could be phrased less anachronistically.

15 I apologize for the crudity of the epistemography. If my approach to Berkheimer obtains a substantial traction, I will build a web tool for visualizing epistemographies.



If I had a proper tool to create the epistemography, the lead-pencil and India Rubber epistemic regions would be light blue (representing *a posteriori* synthetic knowledge) while the “joining via insertion” region (whether abstract idea or conventionalization) would be pink. Because there are blue regions, the claim is § 101-eligible. Because neither a lead-pencil nor an India rubber is that might indicate novel non-obvious *a posteriori* synthetic knowledge. There are no overlap regions that would also be either a darker shade of blue or purplish. Such overlap regions would indicate a combination potentially novel non-obvious. With this particular claim epistemography, there is no reason to proceed further with patentability analysis. Blair’s invention is not patentable.

Now let’s look at the epistemography for Gulack ‘633.



Colorization and 3d perspective to provide epistemic topological analysis would be helpful. Yet even the above primitive rendering of the epistemography shows something in the area of triple overlap, which should probably be purple and raised. That triple overlap area is an *a posteriori* synthetic structure in the simplified Kantian framework. This structure is created by a specific placement of specific numbers on the band. That structure is not really recited in the claim except implicitly or

inherently¹⁶. This something is the significantly more that provides § 101-eligibility. We don't know yet whether the claim is patentable, but this analysis of the claim's epistemography enables us to move forward to patentability analysis and even helps us to perform patentability analysis.¹⁷

The band is not novel. Numeric text and mathematical formulas belong to the set of judicial exceptions and conventionalizations. The appearance of the overlap of the epistemic regions of the epistemography of the claim of Gulack '633 focuses attention. Is it possible that a combination of abstract ideas and conventionalizations could change from reddish to bluish and create § 101-eligibility as the CAFC found.

Note that the epistemographic analysis above suggests that the word "amount" in Alice-Mayo two-part test step 2B is not accidental because "amount" has nuance of "summing" or "combining."

In the discussion of the Alice/Mayo two-part test flowchart, MPEP 2106 addresses ordered combination of the additional elements recited by the claim. (See the text following the MPEP Flowchart above, p. 7.)

The meaning of "ordered" in the MPEP text is not clear, but the analysis above of Gulack '633 suggests that "additional" is an error, and the word should be "all" elements.

The epistemography of the *Prometheus* claims would be similar to the epistemography of the proposed modern *Rubber-Tip Eraser* claims. There would be three just touching epistemic regions:

- the medical treatment (bluish),
- the natural phenomenon (reddish), and
- the routine or conventional medical activity of modifying the treatment dosages (reddish).

Because there is blue in the epistemography, the claims are § 101-eligible, but the medical treatment is found in a prior art disclosure. The routine or conventional medical activity does not effect an improvement of the medical treatment. There is nothing novel or non-obvious in the invention staked out in the *Prometheus* claims. These claims are not patentable.

The decision in *Vanda Pharm., Inc. v. West-Ward Pharm. Int'l Ltd*, Appeal No. 2106-2707, -08 (Fed. Cir., April 18th 2018) is interesting when compared with that of *Mayo v. Prometheus*.

[Note that ANDA was very much a subtext of this controversy. See endnote xii.]

Here is a comparison of *Vanda* and *Prometheus* claims.

¹⁶ Epistemographies might provide a means to describe inherent limitations of prior art claims more precisely.

¹⁷ Analysis of the epistemography of a claim probably eliminates the need for Printed Matter Doctrine.

<i>Vanda</i>	<i>Prometheus</i>
<p>A method for treating a patient with iloperidone, wherein the patient is suffering from schizophrenia, the method comprising the steps of:</p> <p>determining whether the patient is a CYP2D6 poor metabolizer by:</p> <p>obtaining or having obtained a biological sample from the patient; and</p> <p>performing or having performed a genotyping assay on the biological sample to determine if the patient has a CYP2D6 poor metabolizer genotype;</p> <p>and if the patient has a CYP2D6 poor metabolizer genotype, then internally administering iloperidone to the patient in an amount of 12 mg/day or less, and if the patient does not have a CYP2D6 poor metabolizer genotype, then internally administering iloperidone to the patient in an amount that is greater than 12 mg/day, up to 24 mg/day, wherein a risk of QTc prolongation for a patient having a CYP2D6 poor metabolizer genotype is lower following the internal administration of 12 mg/day or less than it would be if the iloperidone were administered in an amount of greater than 12 mg/day, up to 24 mg/day.</p>	<p>A method of optimizing therapeutic efficacy for treatment of an immune-mediated gastrointestinal disorder, comprising:</p> <p>(a) administering a drug providing 6-thioguanine to a subject having said immune-mediated gastrointestinal disorder; and</p> <p>(b) determining the level of 6-thioguanine or 6-methyl mercaptopurine in said subject having said immune-mediated gastrointestinal disorder,</p> <p>wherein the level of 6-thioguanine less than about 230 pmol per 8×10^8 red blood cells indicates a need to increase the amount of said drug subsequently administered to said subject and</p> <p>wherein the level of 6-thioguanine greater than about 400 pmol per 8×10^8 red blood cells or a level of 6-methyl mercaptopurine greater than about 7000 pmol per 8×10^8 red blood cells indicates a need to decrease the amount of said drug subsequently administered to said subject.</p>

Both claims are directed to natural phenomena. Both claims have something more: the treatments. The *Vanda* claim also has the genotyping test. Obviously both claims are § 101-eligible.

Each claim epistemography has three epistemic regions. Unlike the epistemography of the *Prometheus* claim, the *Vanda* claim epistemography has two bluish epistemic regions because both the *Vanda* treatment and also the genotyping test represent *a posteriori* synthetic knowledge. The three *Vanda* epistemic regions overlap to create a meaningful purplish combination. There is a good possibility according to the epistemography that the *Vanda* claim contains novel non-obvious *a posteriori* synthetic knowledge either in the bluish epistemic regions or in the purplish overlap epistemic region.

Correct and Incorrect Judicial Decisions

Despite the all the problems and confusions associated with § 101-eligibility doctrine, most of cases seem to have been correctly decided even if SCOTUS botched *Mayo v. Prometheus*. *DDR Holdings* and *McRO* were probably incorrectly decided. (See endnote vi.)

The decision in *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371 (Fed. Cir. 2015) is a mess because the CAFC affirmed the decision of the district court, which followed the completely botched SCOTUS *Mayo v. Prometheus* decision.

The *Sequenom* patent may actually have been invalid not because it was § 101-ineligible according to the Alice/Mayo two-part test – this patent was § 101-eligible – but because it may have been unpatentable for lack of novelty. The *Sequenom* method consisted of prior art methods that detected a natural phenomenon that detect *cell-free* DNA in a pregnant female. This invention worked because paternal DNA in maternal blood had to be fetal DNA. That knowledge is purely analytic in the Kantian sense. (See endnote v.) It would require a factual determination, but it is quite possible the *Sequenom* invention is a completely predictable result of prior art that was combined because there already was teaching and motivation to combine in the literature.

2. Well-Understood, Routine, Conventional Activity

Unfortunately, Court has left a gaping whole in its decision by failing to explain how standards whether in software engineering, hardware engineering, or in other technical arts should be considered relative to well-understood, routine, and conventional activity.

It is worthwhile to investigate how PTAB § 101 experts below^{xv} have determined to what a given claim is directed.

The following real case should be of particular interest.

Ex parte JOACHIM C. S. MARTILLO,
FRANK T. SOLENSKY, FRANK J. KASTENHOLZ,
DIETER D. WEBER, ANTHONY Z. BONO, and
AVRI DORIA

Appeal 2015-001667
Application 07/773,161
Technology Center 2400

Before: JOSEPH L. DIXON, JAMES R. HUGHES, and ERIC S. FRAHM,
Administrative Patent Judges.

DIXON, *Administrative Patent Judge*.

DECISION ON APPEAL

This decision from March 3, 2015 ([one day after the USPTO provided the public with official notice of the termination of the Sensitive Application Warning System](#))^{xvi} cannot be found in the [FOIA Reading Room](#) even though the FOIA Reading Room webpage explicitly states the following.

Welcome to the USPTO e-FOIA page. Through this page you can search for publicly available final decisions rendered by the Patent Trial and Appeal Board. In the field below you can enter a proceeding number to search the collection of available decisions.

The decision can only be found via public PAIR. Because the decision is available via public PAIR, it is public. Because it is pre-GATT, it is not published, but lack of publishing does not change the decision's public status. The USPTO seems to have been trying to conceal actions that are applied to pre-GATT applications, that are unlawful under the APA and that violate court orders associated with the Tafas proceedings.^{xvii}

All the SAWS, FOIA, APA, and Tafas issues are noise with respect to the request for comments that this document is addressing.

While the 07/773,161 application is pre-GATT and unavailable in the USPTO's public application database, the [13/368,316 continuation application](#), which has the same written description and drawings can be found in the USPTO's public application database.

Here is Claim 40 of the '161 Application.

40. (Currently Amended) For use with a network switching device having a plurality of input/output devices, a non-volatile computer memory storing software instructions that direct a processing unit to configure the network switching device and to operate the network switching device once configured, the software instructions including:

~~at least one~~ [a] configuration routine that:

defines one or more logical bridges, wherein each of the one or more logical bridges includes one or more ports that provide one or more connections to a logical bridge,

selectively associates each of said input/output devices with a selected one or more of said logical bridges, and

creates one or more data structures that represent which input/output devices have been associated with each logical bridge;
and

~~at least one~~ [a] bridging routine that responds to said one or more data structures by creating said one or more logical bridges with which one or more input/output devices have been associated to operate as one or more separate media access control level bridges including, and having a port for, each of the input/output devices represented as being associated with such logical bridge by said one or more data structures,

whereby execution of the configuration routine creates the one or more data structures and execution of the bridging routine operates the one or more separate media access control level bridges.

Here is the PTAB judgment on this claim.

With respect to independent claim 40, we find this claim to be broader (different) than independent claim 23 (reciting a configuration routine and bridging routine in the body without any associated hardware devices). We find the preamble of claim 40 sets forth a device, but the body of the claim, as a whole is directed to “software instructions” without any recitation of tangible or non-transitory medium. We find Appellants’ general arguments to be unpersuasive of error in the Examiner’s finding that claim 40 is directed to an abstraction and non-statutory subject matter. Therefore, we find claim 40 to be directed to software per se which is an abstract idea. Consequently, we sustain the Examiner’s rejection of independent claim 40 as directed to non-statutory subject matter.

SCOTUS publicized the Alice/Mayo two-part test on June 19, 2014. The Decision on Appeal was issued on March 3, 2015.

The PTAB is correct that Claim 40 is directed to “software instructions,” which do constitute an abstraction and non-statutory subject matter, but the Claim also recites:

- input/output devices – genuine devices,
- non-volatile computer memory – possibly a conventionalization in a CRM or Beauregard claim,
- a processing unit – possibly a conventionalization,
- a configuration routine, whose definition in the specification includes storing clearly defined structures in memory – the applicant is his own lexicographer, and
- media access control level bridges – completely standardized devices as the written description pointed out.

Claim 40 recites the “significantly more” that makes it § 101-eligible.

While the PTAB generated this nonsense because of SAWS orders, it was tremendously irritating that the Examiner and the PTAB consistently treated standardization as conventionalization (“well-understood, routine or conventional activity”) as if they truly believed this equivalence without any influence of SAWS.

The MPEP needs to point out that standardization is not “well-understood, routine or conventional activity.”

3. Impact on Examination Procedure

While the discussion of the impact on examination procedure is completely reasonable, citing DDR Holdings to show “elements that favored eligibility because they were more than well-understood, routine conventional activities in the field” ([MPEP 2106.05\(d\) Well-Understood, Routine, Conventional Activity \[R-08.2017\]](#)) is problematic because these elements constituted effectively calculable functions or procedures and are logically equivalent to pencil-and-paper calculation. Computerizing a pencil-and-paper calculation is the poster child for “well-understood, routine, conventional activities” in software engineering. See endnote vi.

Summary

Decisions of SCOTUS and the CAFC seem to have created something like a new judicial exception, which is well-understood, routine, conventional activity that adds nothing to the § 101-eligibility of a claim. Because determining whether an element is a conventionalization is a factual determination, this new addition to § 101-eligibility doctrine may counterbalance apparent arbitrariness in this doctrine and forestall judicial error. These changes in examination procedure seem helpful and may give the USPTO a starting point to address other problems in the US patent system.

- i [Wiktionary](#) explains the usage of the words [epistemic](#) and [epistemological](#) as follows.

Philosophers differentiate the meanings of “epistemic” and “epistemological” where, broadly, epistemic means “relating to knowledge (itself)”[1] and epistemological means “relating to the study or theory of various aspects of knowledge”

Because claiming an invention is metaphorically staking out a claim to epistemic territory or an epistemic mine, the terms epistemic and epistemological should play a larger role in patent law.

- ii The decision in *Boulton v. Bull* (1795) uses “philosophic principle” instead of “abstract idea” while *Rubber-Tip Pencil Co. v. Howard* refers to “idea of itself.” Here is a footnote from *Boulton*.

(a)¹ [This question came afterwards before the Court of King’s Bench, in the case of *Hornblower v. Boulton*, 8 T. R. 95, on error from the Common Pleas, when it was unanimously resolved that the invention was the subject of a patent, and the patentee’s right was valid. It seemed admitted there that under the statute 21 Jac. I. c. 3, s. 6, there cannot be a patent for a philosophical principle only, which has been since held in the case of *Rex v. Wheeler*, 2 B. & A. 345. Upon the construction of the word manufactures in the statute of James I., the Court in the last cited case observed, “It may perhaps extend also to a new process to be carried on by known implements or elements acting upon known substances, and ultimately producing some other known substance, but producing it in a cheaper or more expeditious manner, or of a better and more useful kind.” As to patents for improvements, see *Harmer v. Playne*, 11 East, 110. *Macfarlane v. Price*, 1 Stark. N. P. C. 199. *Lord Cochrane v. Smethurst*, *ibid.* 205. *Campion v. Benyon*, 3 Brod. & Bing. 5. See also *Hill v. Thompson*, 8 Taunt. 375. 3 Merivale, 629. 2 B. Moore, 425, S. C. *Savory v. Price*, 1 R. & M. N. P. C. 1.]

A philosophic principle in the terminology of the late 18th century corresponds to a natural law, a natural phenomenon, or an abstract idea in the SCOTUS terminology.

[Keep in mind that during the Enlightenment period and for some time subsequent, the common English term for science was natural philosophy.]

- iii It is probably necessary to have studied at least each of the following authors – at least each parenthesized work in depth – in order to be capable of developing a systematic framework in which all questions of § 101-eligibility can be addressed:

- Rene Descartes, 1596-1650 (*Meditationes de prima philosophia*),
- John Locke, 1632-1704 (*An Essay Concerning Human Understanding*),
- George Berkeley, 1685-1753 (*A Treatise Concerning the Principles of Human Knowledge*)
- David Hume, 1711-1776 (*Treatise on Human Nature*), and
- Immanuel Kant, 1724-1804 (*Kritik der reinen Vernunft*).

Because Kant:

- is the last of the major early modern epistemological thinkers,
- summarizes the Enlightenment (*sapere aude*), and
- wrote a major treatise on epistemology as well as a shorter introduction to his treatise,

focusing on Kant is sufficient for practical questions of § 101-eligibility.

Kant’s intellectual apparatus is complex. Neither an American IP lawyer, patent agent, nor a judge need full knowledge of all the details, but someone interested may read Kant’s *Critique of Pure Reason* (or the new Paul Guyer and Allen W. Wood translation) or his *Prolegomena to Any Future Metaphysics*, which is shorter and more accessible. Understanding Kant is valuable because he is so authoritative especially among German speakers for law, for ethics, and for epistemology.

The USPTO could probably offer a 2-4 week long CLE course that covered all the epistemology and epistemics that a patent lawyer or agent professional needs to know.

- iv See *R+L Carriers, Inc. v. Intermec Technologies Corp.*, Petition for a Writ of *Certiorari* (Supreme Court, January 9, 2018), which was filed before the decision in *Berkheimer v. HP*.

R+L Carriers seems to have stumbled into pitfalls created by the *Bilski* judgment from the CAFC and by the *Alice* judgment from SCOTUS.

[CAFC & SCOTUS *Bilski*]

The *Bilski* CAFC judgment states that “hedging is a longstanding commercial practice, ...it is a method of organizing human activity not a ‘truth’ about the natural world.”

SCOTUS then qualified: “Concerns about attempts to call any form of human activity a ‘process’ can be met by making sure the claim meets the requirements of § 101.”

The “requirements of § 101” bring us to the definition in 35 USC § 100.

(b) The term “process” means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.

The above statement is undeniably the poster child for a circular definition.

This sort of material morphed into a section of the 2015 USPTO guidance.

“Certain Methods of Organizing Human Activity”

The phrase “certain methods of organizing human activity” is used to describe concepts relating to interpersonal and intrapersonal activities, such as managing relationships or transactions between people, social activities, and human behavior; satisfying or avoiding a legal obligation; advertising, marketing, and sales activities or behaviors; and managing human mental activity. The 2014 IEG uses the term “certain” to qualify this category description, in order to remind examiners that (1) not all methods of organizing human activity are abstract ideas, and (2) this category description is not meant to cover human operation of machines. Like the other categories, some methods of organizing human activities can also be economic practices or “ideas.” For example, the concept of hedging claimed in *Bilski* was described by the Supreme Court as both a method of organizing human activity and a fundamental economic practice. As shown below, these concepts have common characteristics.

- Several cases have found concepts relating to managing relationships or transactions between people abstract, such as creating a contractual relationship (*buySAFE*), hedging (*Bilski*), mitigating settlement risk (*Alice Corp.*), processing loan information (*Dealertrack*), managing an insurance policy (*Bancorp*), managing a game of Bingo (*Planet Bingo*), allowing players to purchase additional objects during a game (*Gametek*), and generating rule-based tasks for processing an insurance claim (*Accenture*).
- At least two cases have found concepts relating to satisfying or avoiding a legal obligation abstract, such as tax-free investing (*Fort Properties*) or arbitration (*In re Comiskey*).
- Several cases have found concepts relating to advertising, marketing and sales activities or behaviors abstract, such as using advertising as an exchange or currency (*Ultramercial*), structuring a sales force or marketing company (*In re Ferguson*), using an algorithm for determining the optimal number of visits by a business representative to a client (*In re Maucorps*), allowing players to purchase additional objects during a game (*Gametek*), and computing a price for the sale of a fixed income asset and generating a financial analysis output (*Freddie Mac*).
- At least two cases have found concepts relating to managing human behavior abstract, such as a mental process that a neurologist should follow when testing a patient for nervous system malfunctions (*In re Meyer*), and meal planning (*DietGoal*).

[SCOTUS *Alice*]

The introduction of a computer into the claims does not alter the analysis at Mayo step two. In *Benson*, for example, we considered a patent that claimed an algorithm implemented on “a general-purpose digital computer.” 409 U. S., at 64. Because the algorithm was an abstract idea, see *supra*, at 8, the claim had to supply a “‘new and useful’” application of the idea in order to be patent eligible. 409 U. S., at 67. But the computer implementation did not supply the necessary inventive concept; the process could be “carried out in existing computers long in use.” *Ibid*.

We accordingly “held that simply implementing a mathematical principle on a physical machine, namely a computer, [i]s not a patentable application of that principle.” *Mayo*, *supra*, at ____ (slip op., at 16) (citing *Benson*, *supra*, at 64).

[Comment]

An Enlightenment jurist at the start of the creation of the US and UK patent systems would probably have been initially puzzled by the phrase “concepts relating to interpersonal and intrapersonal activities” but would eventually have realized the USPTO was reasonably excluding processes like military training (transforming civilians in an army) or like schooling (transforming an uneducated child into a member of the society of educated adults) from the definition of a patent-eligible process.

The same jurist might also have found Ford’s method of manufacturing by assembly line to be patent-eligible when Ford first introduced this method.

Likewise today’s just-in-time (JIT) manufacturing would almost certainly represent a patent-eligible improvement.

R+L Carriers has created a “just-in-time” shipping method which organizes shipping and neither interpersonal nor intrapersonal relations.

The independent method claim could have been written to comprise asynchronous steps of synchronous submethods executed either by humans or by machines, but such alternative drafting probably would not make much difference.

Methods of organizing machines can certainly be patent-eligible (e.g. transforming a group of separate packeting switching devices into a coherent computer network by means of the IEEE 802.1d MAC Bridges protocol).

The R+L Carriers computers and remote devices simply become components in the shipping system just as Diehr’s computer was just another component in Diehr’s vulcanization system.

In this way, it should have been possible to navigate around the *Alice* exclusion of simple computerization of a pencil-and-paper calculation.

There might have been some value to adding a set of game claims describing the shipping process as game that the shipper wins by optimizing the shipping process and lowering his shipping cost relative to non-just-in-time shippers.

In this way the claims would pass the *Alice*/*Mayo* two-part test step 2B because they would encompass substantial Kantian-sense *a posteriori* synthetic knowledge that would represent considerably more than effectively calculable (Kantian-sense) analytic knowledge associated with computerizing a paper-and-pencil calculation. (See endnotes v and vi.)

- v When a law refers to accounting issues, judges have no reluctance to investigating accounting concepts. The judges of CAFC showed great interest in legal accounting in the *en banc* oral hearing of *Nantkwest v. Iancu*. Claim construction, which is a matter of law and is based in factual analysis, requires understanding of the technological art in which a claim is staked out. In other words, a claim is staked out to a territory a knowledge. As technological knowledge expands rapidly and becomes more complex, US patent system stakeholders should have no reluctance to addressing the concept of claiming in the abstract via epistemological fundamentals just as it addresses the concept of claim definiteness or particularity by means of terminology from surveying.

Introducing the following four definitions distilled from Kant's epistemology would help to clarify the *Alice/Mayo* two-part test immensely.

- *A priori* knowledge (also prior knowledge but Kantian use of the word "prior" conflicts with the patent law use of the word "prior"): the knowledge which is independent of experience. Because natural laws and natural phenomena (like a naturally occurring element, mineral or compound) are discovered and not invented, they are *a priori* knowledge. In Kantian formalism mathematical postulates and theorems have a somewhat more complex status, but for the purposes of patent law, it is reasonable to consider the former *a priori* knowledge while the latter is analytic knowledge derived from the former. A mathematical algorithm like the Spanning Tree Algorithm can be considered a mini-constructive theorem, which is mathematical analytic knowledge.
- *A posteriori* knowledge (also posterior knowledge): the knowledge which derives from experience or human mental or physical fabrication. While this knowledge can be deduced from *a priori* knowledge analytically, it may also be created by an inventor synthetically.
- Analytic knowledge: the knowledge, which can be expressed via an analytic proposition. An analytic proposition is a proposition, whose subject idea contains its predicate. Kant's example is: "All bachelors are unmarried." The theorems of a mathematical system are inherent in the postulates. The concept of inherency in patent law is akin to analytic knowledge, but inherency may involve conventional synthetic knowledge. (As stated previously, the case law associated with the US patent system avoids bright-lines.)
- Synthetic knowledge: the knowledge, which cannot be expressed via analytic proposition. Synthetic knowledge may be either *a priori* like a mitochondria or *a posteriori* like a mousetrap.

The metes and bounds of a § 101-eligible claim appear to be required to encompass a knowledge combination that includes *a posteriori* synthetic knowledge. For §§ 102 & 103 patentability the metes and bounds of a patentable claim apparently must encompass a knowledge combination that includes novel non-obvious *a posteriori* synthetic knowledge. The courts avoid bright lines. If the total *a posteriori* synthetic knowledge of a claim's epistemography is insignificant, conventional, routine, or predictable, it probably will not be sufficient to render a claim § 101-eligible (*Alice/Mayo* two-part test step 2B). The structure (a device for teaching about mathematics) created by the combination of prior *a posteriori* synthetic knowledge (the band and the numerals placed on it) and *a posteriori* analytic knowledge ([*Gulack, Educational and recreational mathematical device in the form of a band, ring or concentric rings, US patent 4,416,633*](#)) represents significant **novel non-obvious** *a posteriori* synthetic knowledge and is patentable despite Printed Matter Doctrine. See *In re Gulack*, 703 F.2d 1381, 1385, 217 USPQ 401, 403-04 (Fed. Cir. 1983).

- vi SCOTUS probably meant the phrase well-understood, routine, conventional activity to cover:
- claiming an invention that is nothing more than computerization (“do it on a computer”) of a pencil-and-paper calculation; and
 - claiming an new treatment that does nothing more than add a standard medical procedure to an old treatment.

The issue appears in the following paragraph from *Parker v. Flook*, 437 U. S. 584 (1978).

The patent application does not purport to explain how to select the appropriate margin of safety, the weighting factor, or any of the other variables. Nor does it purport to contain any disclosure relating to the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system. All that it provides is a formula for computing an updated alarm limit. Although the computations can be made by pencil and paper calculations, the abstract of disclosure makes it clear that the formula is primarily useful for computerized calculations producing automatic adjustments in alarm settings.

CyberSource Corp. v. Retail Decisions, Inc., 654 F.3d 1366 (Fed. Cir. 2011) reiterates the issue more explicitly in the following paragraph.

The Supreme Court reaffirmed and extended its *Benson* holding in the case of *Parker v. Flook*, 437 U.S. 584 (1978). The patent in *Flook* claimed a method for calculating and updating the values of “alarm limits” for alarms that monitor process variables (such as temperature) during the catalytic chemical conversion of hydro- carbons. *Id.* at 585–86. The “alarm limits” were threshold values which, if exceeded, would trigger a warning alarm to sound. The Court characterized the invention as “simply provid[ing] a new and presumably better method for calculating alarm limit values.” *Id.* at 594–95. The Court noted that the calculations, while “primarily useful for computerized [applications],” could still “be made [using a] pencil and paper.” *Id.* at 586. The Court rejected the notion that the recitation of a practical application for the calculation could alone make the invention patentable, stating that any “competent draftsman could attach some form of post-solution activity to almost any mathematical formula.” *Id.* at 590. The Court thus found the claimed invention unpatentable.

Alice Corp. Pty. Ltd. v. CLS Bank Intern., 134 S. Ct. 2347 provides a long discussion to explain when computerization is a conventional activity and when computerization is an aspect of a limitation that constitutes something “significantly more.”

To summarize, in the context of computerizing a pencil-and-paper calculation, a well-understood, routine, conventional activity seems often roughly analogous to the substrate of Printed Matter Doctrine. Perhaps the phrase “well-understood, routine, conventional activity” should be replaced in some cases with the phrase “active substrate” – which is probably not an unreasonable description of a processor+memory.

When CAFC or SCOTUS refers the possibility of calculation by pencil and paper, these courts are referring to conjectures in computability theory, which is an area within mathematical logic, which is an area within epistemology. (It might be better to say that mathematical logic, philosophy of mathematics, and epistemology are intrinsically intertwined.) In the 21st century effectiveness in patent law requires that practitioners, judges, and adjudicators have some acquaintance with epistemology and epistemics. Otherwise patent law devolves to chaos, which is not a bad characterization of the current situation.

[A minimal familiarity with computability theory will help patent law professionals understand that computerizing a pencil-and-paper calculation is different from computerized control like the opening of rubber molds at the precisely correct as is taught in *Diehr* ‘[142](#).]

Nowadays it is almost inherently obvious (in a popular but non-§ 103 sense) to use a computer to perform a complex mathematical calculation. In addition, the Church Turing Thesis tells us that a limitation of using a computer to execute a program to perform a complex math problem, which is effectively calculable like almost certainly all the calculations in the financial industry, adds only Kantian-sense analytic knowledge to the knowledge encompassed by the metes and bounds of the claim.

The Church Turing Thesis states that a function on the natural numbers is computable by a human being following an algorithm, ignoring resource limitations, if and only if it is computable by a Turing machine. The thesis is named after American mathematician Alonzo Church and the British mathematician Alan Turing. Before the precise definition of computable function, mathematicians often used the informal term effectively calculable to describe functions that are computable by paper-and-pencil methods. In the 1930s, several independent attempts were made to formalize the notion of computability.

- In 1933, Austrian-American mathematician Kurt Gödel, with Jacques Herbrand, created a formal definition of a class called general recursive functions. The class of general recursive functions is the smallest class of functions (possibly with more than one argument) which includes all constant functions, projections, the successor function, and which is closed under function composition, recursion, and minimization.
- In 1936, Alonzo Church created a method for defining functions called the λ -calculus. Within λ -calculus, he defined an encoding of the natural numbers called the Church numerals. A function on the natural numbers is called λ -computable if the corresponding function on the Church numerals can be represented by a term of the λ -calculus.
- Also in 1936, before learning of Church's work, Alan Turing created a theoretical model for machines, now called Turing machines, that could carry out calculations from inputs by manipulating symbols on a tape. Given a suitable encoding of the natural numbers as sequences of symbols, a function on the natural numbers is called Turing computable if some Turing machine computes the corresponding function on encoded natural numbers.

It unfortunately probably is not obvious to mere computer users (in contrast to computer scientists) that the claims of the *DDR Holdings* patents stake out nothing more than effectively calculable operations and Kantian-sense analytic knowledge. The CAFC seems to have been distracted (or wowed) by the networking activity, which was not conventional to the panel judges even if the activity was completely well-understood, routine, and conventional to a computer scientist.

The World Wide Web adds software to transform the Internet into a vast giant NORMA (defined below) distributed multiprocessor system or metacomputer, which in this case is a type of logical computer. Implementing a operations of the sort described in *DDR Holdings* is exactly the same well-understood, routine, conventional activity that computerizing a pencil and paper calculation represents.

Today practically all computer systems are multiprocessor systems because almost all the major CPU chips are available in multicore versions that contain multiple processor cores that run in parallel.

Generally multiprocessor systems fit into three categories:

UMA (Uniform Memory Access) – all processors see memory in exactly the same way,

NUMA (Non-Uniform Memory Access) – each processor can access its local memory quickly and can access remote memory more slowly. Local memory to one processor is remote memory to a separate processor,

NORMA (No Remote Memory Access) – each processor accesses its local memory quickly and cannot access remote memory directly. Instead remote memory is typically accessed by message exchange (over some sort of network medium – like the Internet). In the past such systems have generally been IP based distributed systems that use RPC (Remote Procedure Call) libraries to access resources. (Of course, in the past IBM, DEC, Prime, et alia all had their own proprietary distributed systems based on proprietary networking protocols.)

Various open and proprietary software packages are available as a means to run some number of separate computer systems as a NORMA distributed system. Beowulf is an example of an open software system meant to create a NORMA distributed cluster from off the shelf computer systems. Mercury Systems, Inc. is an example of a company that provides a proprietary cluster distributed systems.

The latest distributed systems skip building RPC libraries and developing (or using) various sorts of resource location systems. Instead they piggy-back on WWW protocols and use extended versions of URLs (Uniform Resource Locators). SOAP (Simple Object Access Protocol) or REST (Representation State Transfer) or combinations thereof are generally used in implementing a WWW based NORMA distributed computing system.

Sometimes NORMA systems use a software layer to emulate NUMA systems.

When such software emulation is built into hardware logic, one typically refers to (NUMA) fabric interconnected systems. Starfabric provides this capability. The DOD likes it, but generally fabric-interconnect has been a solution in search of a problem.

If the CAFC judges that adjudicated *DDR Holdings* understood the WWW as computer scientists do, the claims of the *DDR Holdings* patents would have been invalidated by the precedent of *Gottschalk v. Benson*, 409 U.S. 63 (1972).

Below is the first independent claim of [US patent no. 7,818,399](#) (the '399 patent). As long as the desktop or laptop computer is running the browser, it is part of the vast NORMA distributed computer system that is the WWW.

1. A method of an outsource provider serving web pages offering commercial opportunities, the method comprising:
 - (a) automatically at a server of the outsource provider, in response to activation, by a web browser of a computer user, of a link displayed by one of a plurality of first web pages, recognizing as the source page the one of the first web pages on which the link has been activated;
 - (i) wherein each of the first web pages belongs to one of a plurality of web page owners;
 - (ii) wherein each of the first web pages displays at least one active link associated with a commerce object associated with a buying opportunity of a selected one of a plurality of merchants; and
 - (iii) wherein the selected merchant, the outsource provider, and the owner of the first web page are each third parties with respect to one other;
 - (b) automatically retrieving from a storage coupled to the server pre-stored data associated with the source page; and then
 - (c) automatically with the server computer-generating and transmitting to the web browser a second web page that includes:
 - (i) information associated with the commerce object associated with the link that has been activated, and
 - (ii) a plurality of visually perceptible elements derived from the retrieved pre-stored data and visually corresponding to the source page.

In the above *DDR Holdings*' claim, a web page was just calculated/generated at a server from some (browser) terminal inputs (something quite trivial by use of common automatic web page generation systems) and displayed on a (browser) terminal. The server queried a database that was also located within the NORMA distributed computer system. These claims are at least as directed to an abstract idea as those of *Benson* as was decided in *Gottschalk v. Benson*.

A PHOSITA using the '399 patent as a guide would first implement the *DDR Holdings* method of Claim 1 on a Linux system by installing the mongodb database server thereon along with the node.js server-side scripting system. He would then install one of the node.js mongodb interface packages along with the node.js express server framework package. Then he would simply code the described *DDR Holdings* server. The whole server is unlikely to exceed more than a few hundred lines. He could test the whole system by means of a Chrome, Mozilla, or Safari browser installed on the Linux system. Voilà he have implemented the method of Claim 1 in three local programs (the server script+off-the-shelf browser+mongodb server) on his Linux system. Because he implemented the server by means of node.js, the server script could be run on any computer system that hosts node.js and implements WWW protocols. The server script could access a mongodb server on any computer system that implements WWW protocols. In other words, he just

implemented a system that implements the method of Claim 1. Thus the USPTO and the CAFC have allowed patent claims whose inputs and outputs are purely within a single (distributed) multiprocessor computer system and that don't in anyway represent an improvement to the WWW viewed as a vast NORMA distributed computer system or metacomputer. All of the '399 independent claims should be ineligible under § 101 even though the CAFC incorrectly decided otherwise.

Note [USPTO abstract idea guidance](#) might provide ways to formulate § 101-eligible Web-related claims. The desktop/laptop has sort of a dual personality/identity/aspect. If the user terminates the browser, the user's computer is no longer part of vast NORMA distributed computer system (or metacomputer).

If the browser uploaded a file from the laptop/desktop to a web server that analyzed it and generated a new/modified file that is saved to file storage on the user's desktop/laptop computer and that could be reviewed by the user independent of the World Wide Web (browser) and of the vast NORMA distributed computer system that the WWW forms, a claim could be written that avoided § 101-ineligibility.

McRO represents a similar more easily explained judicial error, which is comparable to that of *DDR Holdings*.

Good lawyering and the wow factor, which pertains to methods of automatic lip synchronization and facial expression animation according to expert-system rules, seems to have resulted in the mistaken *McRO* decision, which treats as patent-eligible the computerization (cleverly termed "automation") of a pencil and paper calculation and

which conflicts with *CyberSource*.

From the standpoint of effective calculability, the problem solved is exactly the same in following expert system rules automatically to transform either a text file, an audio file, a graphics file, or a video file.

Some robotic systems are controlled (or at least configured) via the Web. A novel such system could probably be disclosed in a patent specification, which could according to the precedent of *Diamond v. Diehr*, 450 U.S. 175 (1981) include completely valid claims.

The logic that renders the '399 patent § 101-ineligible should also apply to the Google Panda patent ([US patent no. 8,682,892](#)) and similar patents (like [Larry Page's original Google US patent no. 6,285,999 entitled Method for node ranking in a linked database](#)). The USPTO needs to seriously reevaluate § 101-eligibility within the context of NORMA distributed systems, and judges in the district court system as well as those on the CAFC need to be brought up to speed with respect to modern distributed computing concepts before the patent system is inundated by a new flood of trash patents.

It might be possible to draft a § 101-eligible claim that is directed to computerization of a "pencil and paper" calculation if the claim includes a new data structure created in memory, but such a claim would still have to pass a patentability test. See footnote x.

- vii The EPO has designed a preferred claim format to facilitate claim dissection.

[Inventive Step]

2.2 Two-part form

[Rule 43\(1\)\(a\)](#) and [\(b\)](#) define the two-part form which a claim should have "wherever appropriate". The first part should contain a statement indicating "the designation of the subject-matter of the invention" i.e. the general technical class of apparatus, process, etc. to which the invention relates, followed by a statement of "those technical features which are necessary for the definition of the claimed subject-matter but which, in combination, are part of the prior art". This statement of prior-art features is applicable only to independent claims and not to dependent claims (see [F-IV, 3.4](#)). It is clear from the wording of [Rule 43](#) that it is necessary only to refer to those prior-art features which are relevant to the invention. For example, if the invention relates to a photographic camera but the inventive step relates entirely to the shutter, it would be sufficient for the first part of the claim to read: "A photographic camera including a focal plane shutter" and there is no need to refer also to the other known features of a camera such as the lens and view-finder. The second part or "characterising portion" should state the features

which the invention adds to the prior art, i.e. the technical features for which, in combination with the features stated in sub-paragraph (a) (the first part), protection is sought.

If a single document in the state of the art according to [Art. 54\(2\)](#), e.g. cited in the search report, reveals that one or more features in the second part of the claim were already known in combination with all the features in the first part of the claim and in that combination have the same effect as they have in the full combination according to the invention, the examiner should require that such feature or features be transferred to the first part. Where, however, a claim relates to a novel combination, and where the division of the features of the claim between the prior-art part and the characterising part could be made in more than one way without inaccuracy, the applicant should not be pressed, unless there are very substantial reasons, to adopt a different division of the features from that which he has chosen, if his version is not incorrect.

If the applicant insists on including more features in the preamble than can be derived from the closest available prior art, this should be accepted. If no other prior art is available, such a pre-characterising portion could be used to raise an objection on the ground of lack of inventive step (see [G-VII, 5.1](#), last paragraph).

Note that the EPO intrinsically uses the concept of an inventive concept that Judge Plager concurring-in-part and dissenting-in-part explicitly derides in *Interval Licensing*.

[EPO: Inventive Concept]

The EPO uses identification of a single general inventive concept to form the basis for unity of invention.

1. General remarks

A European application must "relate to one invention only or to a group of inventions so linked as to form a single general inventive concept" (see also [B-VII, 1](#)). The second of these alternatives, i.e. the single-concept linked group, may give rise to a plurality of independent claims in the same category provided these claims comply with [Rule 43\(2\)](#) (see [F-IV, 3.2](#) and [3.3](#)), but the more usual case is a plurality of independent claims in different categories.

When determining unity of invention, a finding of lack of clarity of the claims is on its own not sufficient grounds for a finding of lack of unity.

Normally, too, the sequence of the claims should not have an impact on the determination of unity of invention. However, it will have an impact on which invention is to be considered the first invention mentioned in the claims (see [F-V, 8.2](#)).

Moreover, the fact that the claimed separate inventions belong to different groups of the classification is not in itself a reason for a finding of lack of unity.

An application may contain claims of different categories, or several independent claims of the same category. This is not in itself a reason for an objection of lack of unity of invention if the requirements of [Art. 82](#) and [Rule 44](#) are otherwise met (the relationship between [Rule 43\(2\)](#) and [Art. 82](#) is explained in more detail in [F-V, 14](#)).

With regard to substantive criteria, unity of invention is examined in search and substantive examination in both European and PCT procedures according to the same principles. This does not apply to the respective procedures themselves, where significant differences exist.

[Judge Plager: Inventive Concept]

A bigger puzzle regarding the 'inventive concept' concept: Those who are familiar with the history of the Patent Act, when in 1952 the law of patenting was given a major statutory overhaul, will be the most puzzled. Is it the case that now, some 65 years later, we really have resurrected the concept of an 'inventive concept'?

The late Judge Giles Rich, the grand old man of patent law, whose portrait hangs in the place of honor in the Federal Circuit courthouse — how can he rest in peace? He was one of the acclaimed authors of the new Patent Act. At the time he, along with many others, thought that the undefinable — truly abstract — concept of ‘inventive concept’ had been put into the dustbin of history by the specific criteria for a valid patent in the new Patent Act, specifically § 103, non-obvious subject matter.

[An Inventor’s Comment]

Applying simplified Kantian analysis with minor extension to the epistemography to identify novel non-obvious *a posteriori* synthetic knowledge within a valid claim obviates any need for bogosities like either inventive step or inventive concept. Unity of invention for either utility or design patents would mean a sharing of novel non-obvious *a posteriori* synthetic knowledge. (See endnotes iv, v, and vi.)

Both “inventive step” and also “inventive concept” belong to a completely theoretical approach to invention per se and is are completely disconnected from the actuality and φρόνησις of invention. (See footnote 3).

Once upon a time, there was a Massachusetts corporation named Clearpoint Research Corporation, Inc. To a large extent its business was non-infringing reverse-engineering of extremely pricey products of fat incumbent lazy bloated high-tech companies. The owner-CEO-chief inventor of Clearpoint (Vincent) had the great idea of reverse engineering patented memory boards but replacing critical capacitors and critical inductors by the stray or parasitic capacitance and inductances of precisely engineered PCBs. Not only did the literature of electronic engineering say that such replacement was a bad thing to do, but the literature often said that such replacement was an impossible thing to do.

Vincent and his engineering team did analysis, research, testing, tool development, and mathematical development in order to make such replacement and non-infringing reverse engineered products possible.

It was certainly possible for Vincent to write (through an agent) for each product a specification, which disclosed:

- each novel non-obvious invention clearly,
- enabled each said invention completely,
- demonstrated full possession of each said invention, and
- included claims, each of which
 - “set forth the subject matter that the inventor or a joint inventor [regarded] as the invention” and
 - “particularly [pointed] out and distinctly [defined] the metes and bounds of the subject matter to be protected by the patent grant.”

Yet such a specification need not disclose either the inventive concept or the inventive stop that was the basis of each fully disclosed, enabled, and possessed invention. (Of course, Vincent could have made a separate patent application, which pertained to the foundational invention and whose specification would include a method claim, but he could also decide to use trade secret law to protect the foundational invention, which was never a product and which was characterized by the inventive concept and the inventive step of all the other inventions.)

viii See endnote iv, but *BSG Tech LLC v. BuySeasons, Inc.*, No. 17-1980 (Fed. Cir. 2018) describes a case in which factual analysis is alleged not to be required because the Court finds in step 2A that the claim is directed to an abstract idea and because in step 2B the Court finds not a well-understood, routine, conventional activity (actually element or structure) but only a limitation that provides narrowing of the abstract idea identified in step 2A. The narrowing cannot provide the “significantly more” of the Alice-Mayo two-part test step 2B because a narrowed abstract idea is still an abstract idea. Here is the critical text from the decision.

Here, the only alleged unconventional feature of BSG Tech’s claims is the requirement that users are guided by summary comparison usage information or relative historical usage information. But this simply restates what we have already determined is an abstract idea. At *Alice* step two, it is irrelevant whether considering historical usage information while inputting data may have been non-routine or unconventional as a factual matter. As a matter of law, narrowing or reformulating an abstract idea does not add “significantly more” to it. See *SAP Am., Inc. v. InvestPic, LLC*, No. 2017-2081, slip op. at 14 (Fed. Cir. Aug. 2, 2018) (“What is needed is an inventive concept in the non-abstract application realm . . . [L]imitation of the claims to a particular field of information . . . does not move the claims out of the realm of abstract ideas.”).

BSG Tech does not argue that other, non-abstract features of the claimed inventions, alone or in combination, are not well-understood, routine and conventional database structures and activities. Accordingly, the district court did not err in determining that the asserted claims lack an inventive concept.

This decision is helpful because it tells us that the well-understood, routine, conventional activity of Berkheimer need not actually be an activity but can be an element or structure and because it also seems to tell us that the element found in step 2B to have been recited by the claim must be associated with explicit statement or a clue that it involves something not well-understood, routine, or conventional before a factual determination becomes necessary.

ix *Nantkwest v. Iancu* and *Eon v. AT&T* both refer to terminological issues.

In *Nantkwest* the issue at least partially related to the differences in defining “expenses” according to law or according to accounting.

Eon indicates that mathematicians, software engineers, and judges define “algorithm” in materially different ways.

The MPEP really needs some notes, sidebars, or pop-ups that address terminology conflicts because of differences in epistemic jargon across various technological arts and with standard legal definitions.

x Why might a memory containing a data structure be § 101-eligible and patentable? It seems to be a curious notion and may cause some of the push-back against those patents claimed to be software patents. The reasoning seems analogous to that found in [MPEP 2164.01\(b\) How to Make the Claimed Invention \[R-08.2012\]](#).

Naturally, for unstable and transitory chemical intermediates, the “how to make” requirement does not require that the applicant teach how to make the claimed product in stable, permanent or isolatable form. *In re Breslow*, 616 F.2d 516, 521, 205 USPQ 221, 226 (CCPA 1980).

Unfortunately, neither the MPEP nor the courts (nor the EPO, which has an extremely broken concept of a software patent) have explained what a software patent really is. The following is attempt (mostly borrowed from a plurality of sources). For those not interesting in reading up on some very basic digital electronics, the following is the punchline.

A correctly written software patent is shorthand for a tremendous amount of structure including basic digital elements called gates. Including all those digital elements in attempt to provide enablement at the lowest digital circuit level would provide the exact opposite of a clear and concise specification. In addition, the definition of the metes and bounds of the invention in such a low level claim would be unclear both the hardware engineer (probably not the PHOSITA) and also to the software engineer (probably the PHOSITA). Structurally defined inputs and outputs, flow diagrams, and memory structures constitute one way of reasonably specifying the metes and bounds of a claim. The memory structures of the program are roughly analogous to the transitory chemical intermediates of MPEP 2164.01 (b).

An in-memory software data structure invention is shorthand way of describing the novel and non-obvious structure of an intermediate electronic gate array circuit state.

[Note that a computer program itself is an in-memory software data structure as a processor executes it.]

The CAFC points out with *In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) that digital computer (program-executing device) as a component combined with software as component can interchange with discrete digital components. Possibly an ASIC (Application Specific Integrated Circuit) or an FPGA (Field Programmable Gate Array) into which logic has been synthesized can also substitute for a computer as a component combined with software as a component. An ASIC and FPGA designer will say that he programs ASICs or FPGAs. Yet compiling a software program to run on a computer system and synthesizing logic into a circuit are very different. Most VHSICs (Very High Speed Integrated Circuits) have not been characterized by the active substrate of endnote vi. Recently it has become more common to synthesize ASICs and FPGAs with a processor core that can be associated with memory. After synthesis the final programmed IC may be a program-executing device having an active substrate. In claiming a programmed ASIC or FPGA, the inventor needs to supply:

- a high-level logic description, which may look like a software program;
- detailed description of IC inputs and outputs; and also
- internal structure or register descriptions.

One is unlikely to use much in the way of analog mechanical logic today, but it is worth mentioning that a non-infringing substitute for the invention described in [US patent no. 4344142 A \(Direct digital control of rubber molding presses\)](#), which is the subject of *Diamond v. Diehr*, 450 U.S. 175 (1981), could probably have been created from several materials, each of whom expanded according to different factors on heating or each of whose resistance changed by different amounts according to temperature.

Similar complexity exists in pharmacology, in biotechnology, and in biochemistry. Inventions can combine technologies of the biologic arts with technologies of the digital electronic arts. As knowledge expands and its resolution requires increasing detail, staking out a claim to an invention (a territory of knowledge) becomes more complex. For this reason a modern patent prosecutor can be considered an epistemographer or someone that maps out knowledge.

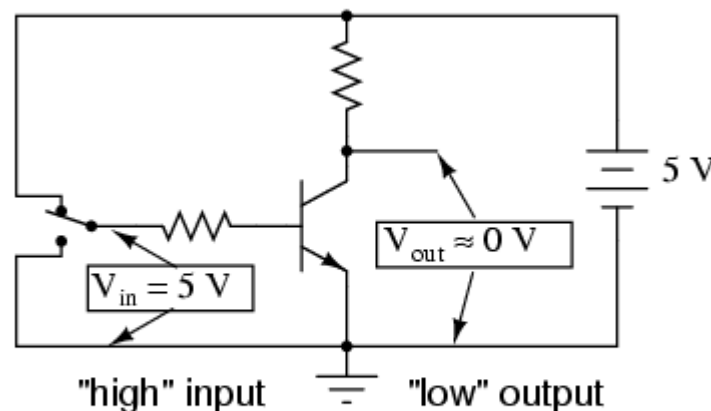
Those that are obsessive are free to read the rest of this endnote.

From: Digital Signals and Gates [Logic Gates]

While the binary numeration system is an interesting mathematical abstraction, we haven't yet seen its practical application to electronics. This chapter is devoted to just that: practically applying the concept of binary bits to circuits. What makes binary numeration so important to the application of digital electronics is the ease in which bits may be represented in physical terms. Because a binary bit can only have one of two different values, either 0 or 1, any physical medium capable of switching between two saturated states may be used to represent a bit. Consequently, any physical system capable of representing binary bits is able to represent numerical quantities and potentially has the ability to manipulate those numbers. This is the basic concept underlying digital computing.

Electronic circuits are physical systems that lend themselves well to the representation of binary numbers. Transistors, when operated at their bias limits, may be in one of two different states: either cut off (no controlled current) or saturation (maximum controlled current). If a transistor circuit is designed to maximize the probability of falling into either one of these states (and not operating in the linear, or active, mode), it can serve as a physical representation of a binary bit. A voltage signal measured at the output of such a circuit may also serve as a representation of a single bit, a low voltage representing a binary "0" and a (relatively) high voltage representing a binary "1." Note the following transistor circuit:

Transistor in saturation



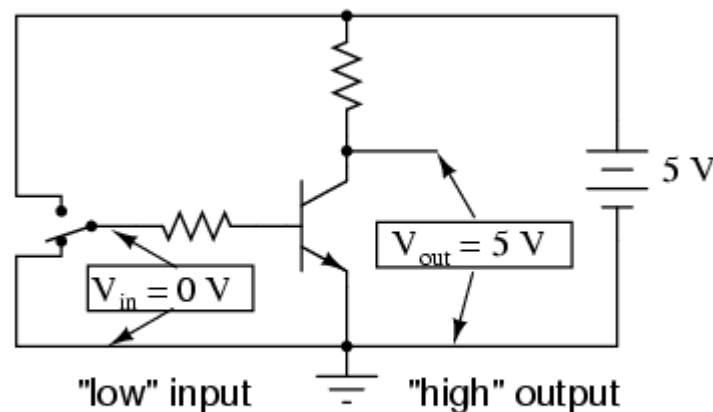
0 V = "low" logic level (0)

5 V = "high" logic level (1)

In this circuit, the transistor is in a state of saturation by virtue of the applied input voltage (5 volts) through the two-position switch. Because its saturated, the transistor drops very little voltage between collector and emitter, resulting in an output voltage of (practically) 0 volts. If we were using this circuit to represent binary bits, we would say that the input signal is a binary “1” and that the output signal is a binary “0.” Any voltage close to full supply voltage (measured in reference to ground, of course) is considered a “1” and a lack of voltage is considered a “0.” Alternative terms for these voltage levels are high (same as a binary “1”) and low (same as a binary “0”). A general term for the representation of a binary bit by a circuit voltage is logic level.

Moving the switch to the other position, we apply a binary “0” to the input and receive a binary “1” at the output:

Transistor in cutoff



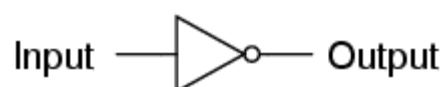
0 V = "low" logic level (0)

5 V = "high" logic level (1)

What we've created here with a single transistor is a circuit generally known as a logic gate, or simply gate. A gate is a special type of amplifier circuit designed to accept and generate voltage signals corresponding to binary 1's and 0's. As such, gates are not intended to be used for amplifying analog signals (voltage signals between 0 and full voltage). Used together, multiple gates may be applied to the task of binary number storage (memory circuits) or manipulation (computing circuits), each gate's output representing one bit of a multi-bit binary number. Just how this is done is a subject for a later chapter. Right now it is important to focus on the operation of individual gates.

The gate shown here with the single transistor is known as an inverter, or NOT gate because it outputs the exact opposite digital signal as what is input. For convenience, gate circuits are generally represented by their own symbols rather than by their constituent transistors and resistors. The following is the symbol for an inverter:

Inverter, or NOT gate

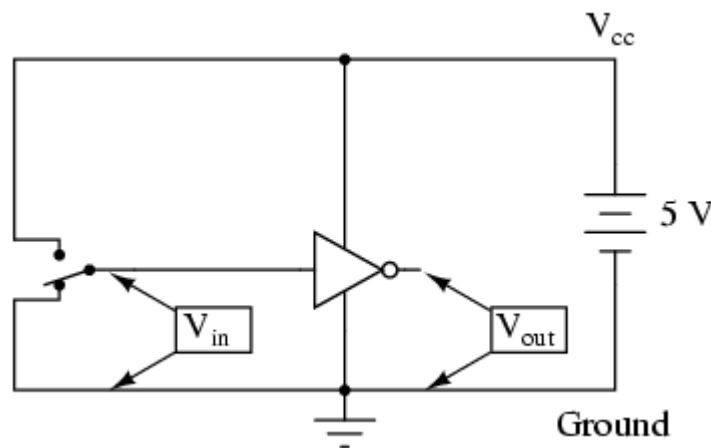


An alternative symbol for an inverter is shown here:

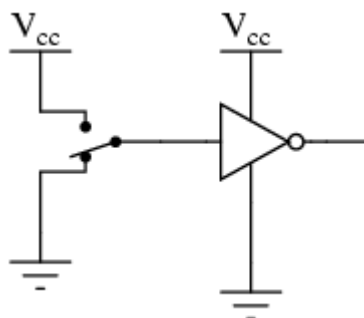


Notice the triangular shape of the gate symbol, much like that of an operational amplifier. As was stated before, gate circuits actually are amplifiers. The small circle or “bubble” shown on either the input or output terminal is standard for representing the inversion function. As you might suspect, if we were to remove the bubble from the gate symbol, leaving only a triangle, the resulting symbol would no longer indicate inversion, but merely direct amplification. Such a symbol and such a gate actually do exist, and it is called a buffer, the subject of the next section.

Like an operational amplifier symbol, input and output connections are shown as single wires, the implied reference point for each voltage signal being “ground.” In digital gate circuits, ground is almost always the negative connection of a single voltage source (power supply). Dual, or “split,” power supplies are seldom used in gate circuitry. Because gate circuits are amplifiers, they require a source of power to operate. Like operational amplifiers, the power supply connections for digital gates are often omitted from the symbol for simplicity’s sake. If we were to show all the necessary connections needed for operating this gate, the schematic would look something like this:



Power supply conductors are rarely shown in gate circuit schematics, even if the power supply connections at each gate are. Minimizing lines in our schematic, we get this:



“ V_{cc} ” stands for the constant voltage supplied to the collector of a bipolar junction transistor circuit, in reference to ground. Those points in a gate circuit marked by the label “ V_{cc} ” are all connected to the same point, and that point is the positive terminal of a DC voltage source, usually 5 volts.

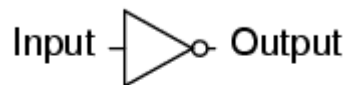
As we will see in other sections of this chapter, there are quite a few different types of logic gates, most of which have multiple input terminals for accepting more than one signal. The output of any gate is dependent on the state of its

input(s) and its logical function.

Expressing Gate Circuit Functions with Truth Tables

One common way to express the particular function of a gate circuit is called a truth table. Truth tables show all combinations of input conditions in terms of logic level states (either “high” or “low,” “1” or “0,” for each input terminal of the gate), along with the corresponding output logic level, either “high” or “low.” For the inverter, or NOT, circuit just illustrated, the truth table is very simple indeed:

NOT gate truth table



Input	Output
0	1
1	0

Truth tables for more complex gates are, of course, larger than the one shown for the NOT gate. A gate’s truth table must have as many rows as there are possibilities for unique input combinations. For a single-input gate like the NOT gate, there are only two possibilities, 0 and 1. For a two input gate, there are **four** possibilities (00, 01, 10, and 11), and thus four rows to the corresponding truth table. For a three-input gate, there are eight possibilities (000, 001, 010, 011, 100, 101, 110, and 111), and thus a truth table with eight rows are needed. The mathematically inclined will realize that the number of truth table rows needed for a gate is equal to 2 raised to the power of the number of input terminals.

REVIEW:

In digital circuits, binary bit values of 0 and 1 are represented by voltage signals measured in reference to a common circuit point called *ground*. An absence of voltage represents a binary “0” and the presence of full DC supply voltage represents a binary “1.”

A *logic gate*, or simply *gate*, is a special form of amplifier circuit designed to input and output logic level voltages (voltages intended to represent binary bits). Gate circuits are most commonly represented in a schematic by their own unique symbols rather than by their constituent transistors and resistors.

Just as with operational amplifiers, the power supply connections to gates are often omitted in schematic diagrams for the sake of simplicity.

A *truth table* is a standard way of representing the input/output relationships of a gate circuit, listing all the possible input logic level combinations with their respective output logic levels.

[From: Random Access Memory using Logic Gates](#)

In our previous blog post, “Binary Additions using Logic Gates”, we investigated how logic gates can be used together to create a circuit used in the ALU (Arithmetic & Logic Unit of the CPU) to add two binary numbers together.

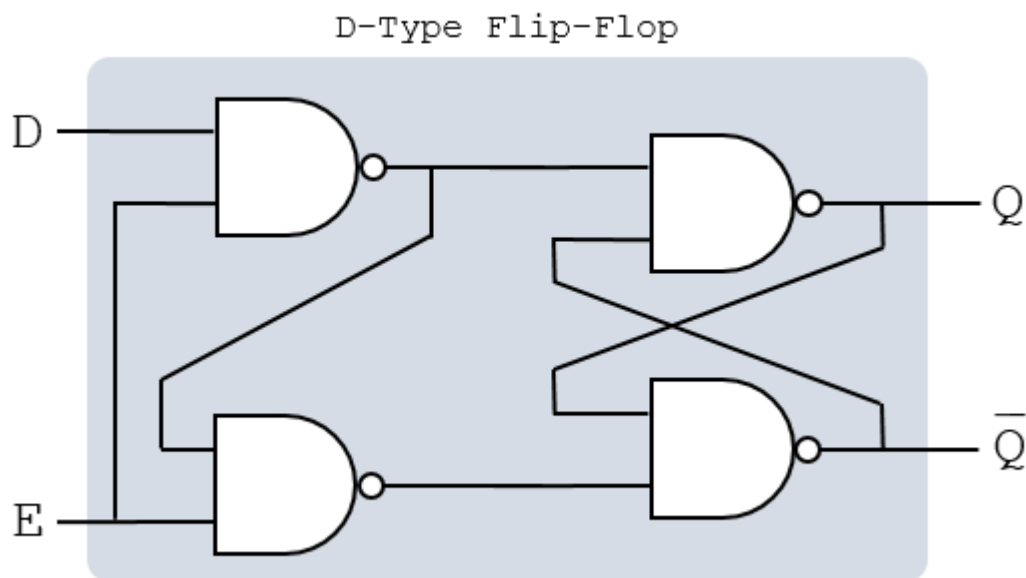
In this blog post we will investigate how logic gates are used to create the RAM (primary memory), in other words how logic gates can be used to store volatile information.

Random Access Memory

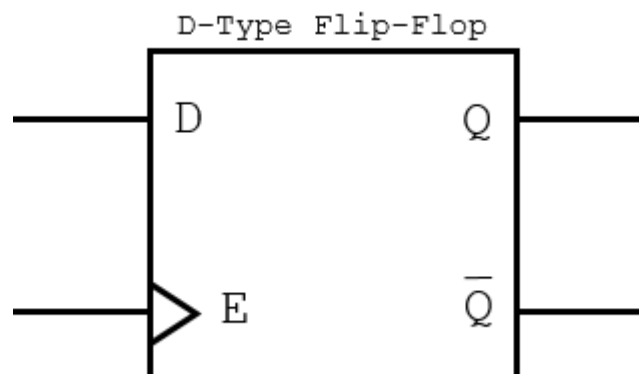
Random Access Memory (RAM) is volatile memory that sits next to the CPU. (Volatile means that it is wiped out when the computer is switched off). It is used to store instructions and data currently used by the CPU. RAM consists of billions of Data Cells, each data cell being able to store one bit of information. For instance a 2GB RAM can store 2,000,000,000 Bytes of information = 16,000,000,000 bits of information and hence consists of 16,000,000,000 data cells.

D-Type Flip-Flop Circuits

Each data cell consists of a D-Type Flip-Flop circuit that is built using four NAND logic gates connected as follows:



We represent a D-Type Flip-Flop Circuit as follows. You can change the input values D and E by clicking on the corresponding buttons below to see the impact on the outputs Q and \bar{Q} .



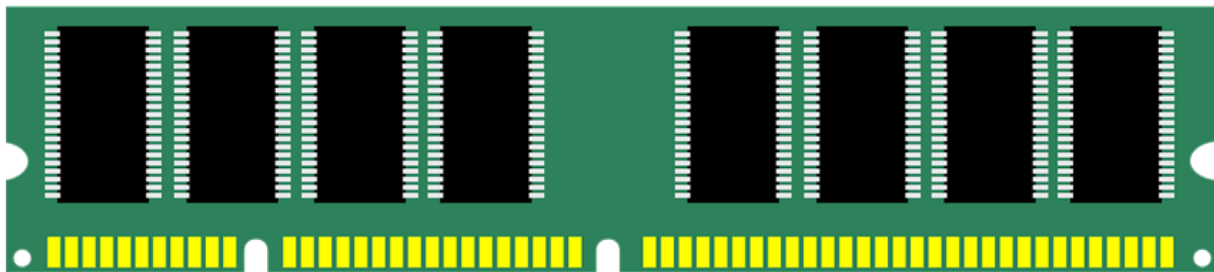
A D-Type Flip-Flop Circuit is used to store 1 bit of information. It has two input pins (Called D (Data) and E (Enabler)) and two output pins (Q and \overline{Q} = NOT Q).

The truth table of a D-Type Flip-Flop circuit is as follows:

Input		Output	
D	E	Q	\overline{Q}
0	1	0	1
1	1	1	0
0	0	Q	\overline{Q}
1	0	Q	\overline{Q}

When the enabler input E is set to 1, the output Q can be set to the Data input D.

When the enabler input E is set to 0, the output Q cannot be changed. It remains as its previous value. In other words it retains its value. This is why this circuit is used to create memory cells (e.g in the RAM).



Random Access Memory (RAM) consists of billions of data cells, each data-cell uses a D-Type flip-flop circuit.

Clock Signal and Delaying Effect

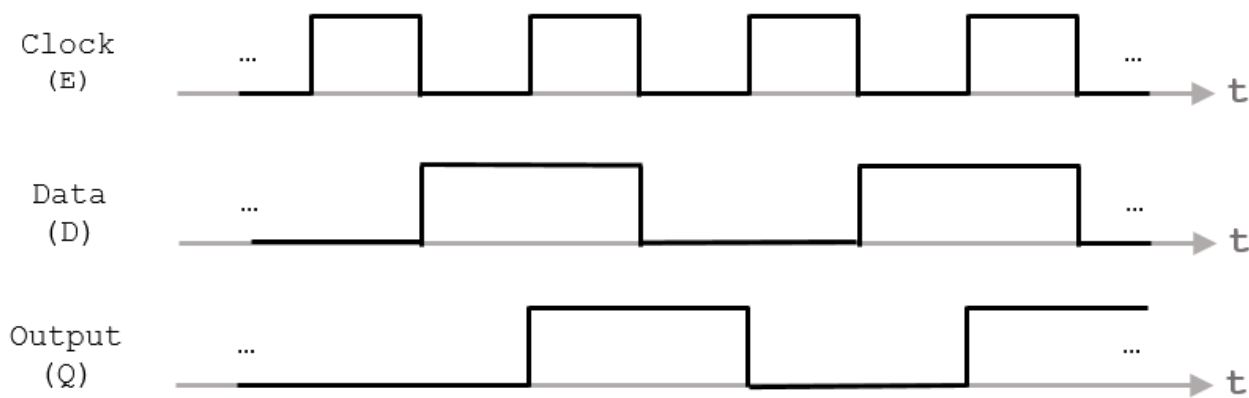
The enabler input E is often connected to another circuit called the clock (e.g. CPU clock). The clock signal constantly and regularly alternate between two states: 0 and 1, similar to a heart beat. Inside the CPU the clock signal controls the execution of the FDE (Fetch-Decode-Execute) cycle.



The Clock Signal is similar to a heart beat.

When the clock signal is applied to the Enabler input (in this case also called the clock input), the flip-flop output Q can only change values when triggered by the clock signal. The value of the flip-flop is held or delayed until the next clock signal. This delaying effect is also called a latch. This is why we call this circuit a D-Type flip flop where D stands for Delay.

In other words, the change of input (D) is not applied immediately (to the output Q) but is applied at the next “tick of the clock”. There are many applications to this delay such as the ability to create a frequency divider. (divide the clock frequency by a multiple of 2).



Delaying effect when using a D-Type Flip-Flop circuit.

The Rest of the Computer

The rest of the computer is much more complex but for the most part uses more logic gates with analog components like resistors, inductors, and capacitors where need. The processor, which nowadays is a VHSIC (Very High Speed Integrated Circuit), over and over performs an FDE [Fetch-Decode-Execute] cycle. (Nowadays almost all desktops, laptops and servers use multiprocessors, which are optimized in numerous ways). The various components of a computer including I/O devices, which nowadays tend to be ICs, are mostly connected by printed circuits of a PCB (Printed Circuit Board) although other interconnection schemes may be used – especially when connect MEMS (Micro-Electro-Mechanical System) to a computer system.

- xi Text discussed in the context of IP might transcribe a novel, a poem, a recipe, or similar literature. Such a latter example of creativity is eligible for copyright and is sometimes philosophically termed *corpus mysticum*. This *corpus mysticum* represented as text on a page (substrate or perhaps passive substrate) of a physical book is given no patentable weight. The physical book is *opus mechanicum*. To discuss a patent philosophically, it is necessary to resort to a classical Greek, which is a more philosophically sophisticated language than Latin, which is unlike English especially appropriate for scientific and technological description. A patent is a combination of τέχνη (craftsmanship) and φρόνησις (technological and non-technological practical wisdom). So what is Gulack’s numeric text. Is it *corpus*

mysticum? Is it just an embodiment of the abstract idea of algebraic number theory? Or is it really part of the φρόνησις that makes Gulack's invention patentable? [Note that some scholars conversant in classical philosophic Greek might disagree with the foregoing use of the Greek philosophic terminology.]

- xii While it is not relevant to this request for comments, the [Abbreviated New Drug Application \(ANDA\) process](#) may form an underlying subtext to *Mayo v. Prometheus*.

The claims of [US patent 6,680,302](#), which is part of the basis of the controversy in *Mayo v. Prometheus*, contain nothing new except the detection of the natural phenomenon and well-understood, routine, conventional activity. This combination is nothing more than a probably already practiced patient-response-aware use of the prior art treatment. If *Prometheus* claims were valid, manufacturers of azathioprine (AZA) or 6-mercaptopurine (6-MP), which are drugs invented in the 50s and 60s, could be inducing or contributing to infringement (35 USC § 271) if said manufacturers were not to obtain a license from *Prometheus* – possibly even without labeling their versions with the *Prometheus* treatment.

Look at the *Prometheus* claim on page 14. If such a claim is valid, a drug company could effectively

- add term to its limited monopoly simply by adding a test of the effectiveness of the drug (a natural phenomenon) and then by adjusting the dosage to reflect effectiveness or
- create a patent mediated monopoly on a drug and standard treatment simply by extending the treatment to include *Prometheus*-like conventional medical procedure.

Doctors modify treatments according to patient response all the time, e.g., in synthetic thyroxine treatment for a patient suffering from Hashimoto's thyroiditis or in measuring cholesterol level after prescribing a statin to a patient. If a new measure of efficacy becomes available doctors will use it.

The drug companies don't even have to do research. Medical scientists publish metrics for effectiveness all the time. A pharmaceutical firm need only track published research and look for a new measure of effectiveness. Even though SCOTUS completely botched the *Mayo v. Prometheus* decision (see The *Prometheus* Claims), SCOTUS in effect created a new judicial exception (conventionalization), which is factually determined and which can prevent certain types of gaming of the US patent system.

- xiii According to Wikipedia “[an] interference fit, also known as a press fit or friction fit is a fastening between two parts which is achieved by friction after the parts are pushed together, rather than by any other means of fastening.” The interference fit is standardized as an engineering fit by ANSI and ISO.

The phrase “a straight uniform elongated tube shape having a straight uniform elongated curved side being defined to be a limiting shape of a geometric sequence of straight uniform elongated convex polygon tube shapes, each successive sequence member of said sequence being a straight uniform elongated convex polygon tube shape having more polygon sides than an immediately preceding member” is a compound nominative absolute phrase and is meant to forestall need to apply the Doctrine of Equivalents in an infringement proceeding. The judge-made law Doctrine of Equivalents was first enunciated in *Winans v. Denmead*, 56 U.S. 330 (1853) and was applied to a limit of a sequence of frustum shapes. This local definition via nominative absolute phrase may not successfully obviate need for Doctrine of Equivalents.

While I suffer from something like logorrhea and have difficulty putting something into 10 words when I could use 100 words, I don't believe that an examiner would reject this sort of embedded definition according to [MPEP 2173.05\(m\) Prolix \[R-08.2012\]](#).

- xiv The method of using rubber to erase a pencil mark was first identified in 1770 almost 100 years before the Blair application. The vulcanization process for rubber that made an India rubber possible was not invented until 1839. Thus the vulcanized India rubber was already almost 30 years old at the time of the Blair application. The modern lead-pencil is a French invention developed in focused military research during the Napoleonic Wars when Britain ceased to sell pencils to France. Thus the modern lead-pencil was almost 50 years old when Blair applied for his patent. See *The Pencil: A History of Design and Circumstance* by Henry Petroski.
- xv USPTO Response to Freedom of Information Act (FOIA) Request No. F-13-00218 identifies Judge Joseph L. Dixon at least is a § 101-eligibility expert.

xvi The hasty decision of the PTAB to uphold the examiner one day after SAWS cancellation is inherently suspicious. The '161 Application was almost certainly the last application, whose final rejection was reviewed by APJs under SAWS procedures and with knowledge of its SAWS status. See pp. 38 and 40 of the USPTO Response to Freedom of Information Act (FOIA) Request No. F-15-00004.

[While the aforesaid SAWS document explicitly refers to a submarine status, with the cancellation of SAWS the Gilbert Hyatt pre-GATT patent applications may now be in a special category. A new Mandamus Complaint from Hyatt in case Case 1:18-cv-00546-TSE-MSN refers on page 8 to a category of “Submarine Applications.” See image below.]

A. Senior PTO Officials Decide that Mr. Hyatt Is a “Submariner,” that His Applications Are “Submarine Applications,” and that None Will Be Allowed To Issue

27. Beginning in the 1990s, senior PTO officials including Commissioner Lehman labeled Mr. Hyatt a “submariner” and his applications as ones seeking “submarine patents”—that is, patents with early filing dates covering technologies in wide use at the time of their issuance.

28. According to Mr. Maulsby, Commissioner Lehman sought to put an end to what he viewed as “submarine patents,” and he and his senior staff communicated that objective down the line to Group Directors and SPEs.

Allegation from Mandamus Complaint.

The three APJs all affirmed in the *Decision After Appeal* that they had actually read: the *Final Rejection*; the *Applicant Arguments/Remarks Made in an Amendment*; the *Claims*; the *Response After Final Action*; the *Amendment After Final or under 37 CFR 1.312, initiated by the examiner*; the *Advisory Action (PTOL-303)*; the *Appeal Brief*; the *Examiner's Answer to Appeal Brief*; and the *Reply Brief*.

It is self-evidently obvious that the APJs had not read these documents because they upheld rejections that the Examiner had withdrawn. It is not completely impossible that one APJ might miss the withdrawal, but three APJs?

When called out on upholding withdrawn rejections, the APJs blamed the difficulty of following the Examiner's English, which was, in fact, hideous. While it was often difficult to follow what the Examiner meant in office actions, he was pellucid in withdrawing the rejections.

Even though these APJs admitted that the Examiner's English was generally deficient, they upheld indefiniteness rejections, in which a claim was rendered indefinite by the deletion of 13 words in sequence. They even argued that the Examiner, whose English they put into question, had the right to make such ellipsis.

xvii The *Tafas* proceedings consist of the following cases.

- [Tafas v. Dudas, 541 F. Supp. 2d 805 \(E.D. Va. 2008\)](#) [Tafas I].

- [Tafas v. Doll, 559 F.3d 1345, 1364-65 \(Fed. Cir. 2009\) \[Tafas II\]](#).
- [Tafas v. Doll, 328 Fed. Appx. 658 \(Fed. Cir. 2009\) \[Tafas III\]](#).
- [Tafas v. Kappos, 586 F.3d 1369 \(Fed. Cir. 2009\) \[Tafas IV\]](#).
- [Tafas v. Kappos, 2008-1352 \(Fed. Cir. 2009\), Decided: November 13, 2009 \[Tafas V\]](#).