



# Artificial Intelligence in Patents and in Practice

Moderator: Mark T. Doerr, *Greenspoon Marder LLP*

Kathryn DeBord, *DISCO*

Joshua L. Simmons, *Kirkland & Ellis LLP*

**United States Court of Appeals  
for the Federal Circuit**

---

**STEPHEN THALER,**  
*Plaintiff-Appellant*

v.

**KATHERINE K. VIDAL, UNDER SECRETARY OF  
COMMERCE FOR INTELLECTUAL PROPERTY  
AND DIRECTOR OF THE UNITED STATES  
PATENT AND TRADEMARK OFFICE, UNITED  
STATES PATENT AND TRADEMARK OFFICE,**  
*Defendants-Appellees*

---

2021-2347

---

Appeal from the United States District Court for the Eastern District of Virginia in No. 1:20-cv-00903-LMB-TCB, Judge Leonie M. Brinkema.

---

Decided: August 5, 2022

---

RYAN BENJAMIN ABBOTT, Brown, Neri, Smith & Khan, LLP, Los Angeles, CA, argued for plaintiff-appellant.

DENNIS BARGHAAN, JR., Office of the United States Attorney for the Eastern District of Virginia, United States Department of Justice, Alexandria, VA, argued for defendants-appellees. Also represented by JESSICA D. ABER; FARHEENA YASMEEN RASHEED, PETER JOHN SAWERT,

MEREDITH HOPE SCHOENFELD, Office of the Solicitor,  
United States Patent and Trademark Office, Alexandria,  
VA.

MITCHELL APPER, Jerusalem, Israel, amicus curiae, pro  
se.

---

Before MOORE, *Chief Judge*, TARANTO and STARK, *Circuit  
Judges*.

STARK, *Circuit Judge*.

This case presents the question of who, or what, can be an inventor. Specifically, we are asked to decide if an artificial intelligence (AI) software system can be listed as the inventor on a patent application. At first, it might seem that resolving this issue would involve an abstract inquiry into the nature of invention or the rights, if any, of AI systems. In fact, however, we do not need to ponder these metaphysical matters. Instead, our task begins – and ends – with consideration of the applicable definition in the relevant statute.

The United States Patent and Trademark Office (PTO) undertook the same analysis and concluded that the Patent Act defines “inventor” as limited to natural persons; that is, human beings. Accordingly, the PTO denied Stephen Thaler’s patent applications, which failed to list any human as an inventor. Thaler challenged that conclusion in the U.S. District Court for the Eastern District of Virginia, which agreed with the PTO and granted it summary judgment. We, too, conclude that the Patent Act requires an “inventor” to be a natural person and, therefore, affirm.

I

Thaler represents that he develops and runs AI systems that generate patentable inventions. One such system is his “Device for the Autonomous Bootstrapping of

Unified Science,” which Thaler calls “DABUS.” Thaler has described DABUS as “a collection of source code or programming and a software program.” Supp. App. at 781.

In July 2019, Thaler sought patent protection for two of DABUS’ putative inventions by filing two patent applications with the PTO: U.S. Application Nos. 16/524,350 (teaching a “Neural Flame”) and 16/524,532 (teaching a “Fractal Container”).<sup>1</sup> He listed DABUS as the sole inventor on both applications. Thaler maintains that he did not contribute to the conception of these inventions and that any person having skill in the art could have taken DABUS’ output and reduced the ideas in the applications to practice.<sup>2</sup>

In lieu of an inventor’s last name, Thaler wrote on the applications that “the invention [was] generated by artificial intelligence.” App. at 28, 69. He also attached several documents relevant to inventorship. First, to satisfy 35 U.S.C. § 115’s requirement that inventors submit a sworn oath or declaration when applying for a patent, Thaler

---

<sup>1</sup> The administrative records for both applications are materially identical.

<sup>2</sup> While inventorship involves underlying questions of fact, *see Dana-Farber Cancer Inst., Inc. v. Ono Pharm. Co.*, 964 F.3d 1365, 1370 (Fed. Cir. 2020), *cert. denied*, 141 S. Ct. 2691 (2021), for purposes of this litigation the PTO has not challenged Thaler’s representations, *see* D. Ct. Dkt. No. 25, at 11. Accordingly, our analysis must be consistent with the undisputed facts in the administrative record, drawing inferences in favor of the non-moving party. *See Safeguard Base Operations, LLC v. United States*, 989 F.3d 1326, 1349 (Fed. Cir. 2021) (discussing when it is appropriate to supplement administrative record and noting “[t]he focal point for judicial review should be the administrative record already in existence”) (quoting *Camp v. Pitts*, 411 U.S. 138, 142 (1973)).

submitted a statement on DABUS' behalf. Second, Thaler provided a supplemental "Statement on Inventorship" explaining that DABUS was "a particular type of connectionist artificial intelligence" called a "Creativity Machine." App. at 198-203, 483-88. Third, Thaler filed a document purporting to assign himself all of DABUS' rights as an inventor.

The PTO concluded both applications lacked a valid inventor and were, hence, incomplete. Accordingly, it sent Thaler a "Notice to File Missing Parts of Nonprovisional Application" for each application and requested that Thaler identify valid inventors. In response, Thaler petitioned the PTO director to vacate the Notices based on his Statements of Inventorship. The PTO denied Thaler's petitions on the ground that "a machine does not qualify as an inventor." App. at 269-71, 548-50. Thaler sought reconsideration, which the PTO denied, explaining again that inventors on a patent application must be natural persons.

Thaler then pursued judicial review of the PTO's final decisions on his petitions, under the Administrative Procedure Act (APA). *See* 5 U.S.C. §§ 702-704, 706.<sup>3</sup> The parties agreed to have the District Court adjudicate the challenge based on the administrative record made before the PTO and filed cross-motions for summary judgment. After briefing and oral argument, the Court granted the PTO's motion for summary judgment and denied Thaler's request to reinstate his applications. The District Court concluded that an "inventor" under the Patent Act must be an "individual"

---

<sup>3</sup> The District Court had jurisdiction under 28 U.S.C. § 1331. *See also* 5 U.S.C. § 702 ("A person suffering legal wrong because of agency action, or adversely affected or aggrieved by agency action within the meaning of a relevant statute, is entitled to judicial review thereof.").

and the plain meaning of “individual” as used in the statute is a natural person.

Thaler appealed. We have jurisdiction under 28 U.S.C. § 1295. *See Odyssey Logistics & Tech. Corp. v. Iancu*, 959 F.3d 1104, 1108 (Fed. Cir. 2020) (explaining that Federal Circuit has jurisdiction over appeals from district court decisions raising APA claims against PTO regarding patents).

## II

We review grants of summary judgment according to the law of the regional circuit, in this case the Fourth Circuit. *See Supernus Pharms., Inc. v. Iancu*, 913 F.3d 1351, 1356 (Fed. Cir. 2019). In the Fourth Circuit, a district court’s grant of summary judgment is reviewed *de novo*. *See id.* (citing *Gallagher v. Reliance Standard Life Ins. Co.*, 305 F.3d 264, 268 (4th Cir. 2002)). Challenges to PTO petition decisions are governed by the APA and pertinent administrative law standards. Thus, we may set aside the judgment resulting from an administrative adjudication only if the agency’s decision is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law” or if the agency’s actions are “in excess of statutory jurisdiction, authority, or limitations.” 5 U.S.C. § 706. “Statutory interpretation is an issue of law that we review *de novo*.” *Facebook, Inc. v. Windy City Innovations, LLC*, 973 F.3d 1321, 1330 (Fed. Cir. 2020).

## A

The sole issue on appeal is whether an AI software system can be an “inventor” under the Patent Act. In resolving disputes of statutory interpretation, we “begin[] with the statutory text, and end[] there as well if the text is unambiguous.” *BedRoc Ltd. v. United States*, 541 U.S. 176, 183 (2004). Here, there is no ambiguity: the Patent Act requires that inventors must be natural persons; that is, human beings.

The Patent Act expressly provides that inventors are “individuals.” Since 2011, with the passage of the Leahy-Smith America Invents Act, the Patent Act has defined an “inventor” as “the *individual* or, if a joint invention, the *individuals* collectively who invented or discovered the subject matter of the invention.” 35 U.S.C. § 100(f) (emphasis added). The Act similarly defines “joint inventor” and “coinventor” as “any 1 of the *individuals* who invented or discovered the subject matter of a joint invention.” § 100(g) (emphasis added). In describing the statements required of an inventor when applying for a patent, the statute consistently refers to inventors and co-inventors as “individuals.” *See* § 115.

The Patent Act does not define “individual.” However, as the Supreme Court has explained, when used “[a]s a noun, ‘individual’ ordinarily means a human being, a person.” *Mohamad v. Palestinian Auth.*, 566 U.S. 449, 454 (2012) (internal alteration and quotation marks omitted). This is in accord with “how we use the word in everyday parlance”: “We say ‘the individual went to the store,’ ‘the individual left the room,’ and ‘the individual took the car,’ each time referring unmistakably to a natural person.” *Id.* Dictionaries confirm that this is the common understanding of the word. *See, e.g., Individual, Oxford English Dictionary* (2022) (giving first definition of “individual” as “[a] single human being”); *Individual, Dictionary.com* (last visited July 11, 2022), <https://www.dictionary.com/browse/individual> (giving “a single human being, as distinguished from a group” as first definition for “individual”). So, too, does the Dictionary Act, which provides that legislative use of the words “person” and “whoever” broadly include (“unless the context indicates otherwise”) “corporations, companies, associations, firms, partnerships, societies, and joint stock companies, *as well as individuals.*” 1 U.S.C. § 1 (emphasis added). “With the phrase ‘as well as,’ the definition marks ‘individual’ as distinct from the list of artificial entities that precedes it,” showing that Congress understands

“individual” to indicate natural persons unless otherwise noted. *Mohamad*, 566 U.S. at 454.

Consequently, the Supreme Court has held that, when used in statutes, the word “individual” refers to human beings unless there is “some indication Congress intended” a different reading. *Id.* at 455 (emphasis omitted).<sup>4</sup> Nothing in the Patent Act indicates Congress intended to deviate from the default meaning. To the contrary, the rest of the Patent Act supports the conclusion that “individual” in the Act refers to human beings.

For instance, the Act uses personal pronouns – “himself” and “herself” – to refer to an “individual.” § 115(b)(2). It does not also use “itself,” which it would have done if Congress intended to permit non-human inventors. The Patent Act also requires inventors (unless deceased, incapacitated, or unavailable) to submit an oath or declaration. *See, e.g., id.* (requiring oath or declaration from inventor that “such individual believes himself or herself to be the original inventor or an original joint inventor of a claimed invention in the application”). While we do not decide whether an AI system can form beliefs, nothing in our record shows that one can, as reflected in the fact that Thaler submitted the requisite statements himself, purportedly on DABUS’ behalf.

Thaler directs us to several provisions of the Patent Act as supposed support for his position that “inventor” should be broadly read to include AI software, but each fails to persuade. First, Thaler points to the use of “whoever” in

---

<sup>4</sup> While *Mohamad* interpreted a statute other than the Patent Act, the Court’s reasoning is directly applicable here. *See generally Legal Def. Fund v. Dep’t of Agric.*, 933 F.3d 1088, 1093-94 (9th Cir. 2019) (concluding that “individual” refers to human beings and not animals, based in part on *Mohamad*).



35 U.S.C. §§ 101 and 271. Section 101 provides that “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” As this very section makes clear, however, patents must satisfy the “conditions and requirements of” Title 35 of the U.S. Code, including its definition of “inventor.” Section 271, in setting out what constitutes infringement, repeatedly uses “whoever” to include corporations and other non-human entities. That non-humans may infringe patents does not tell us anything about whether non-humans may also be inventors of patents. The question before us inevitably leads back to the Patent Act’s definition of “inventor,” which uses the word “individual” – and does not use “whoever.”<sup>5</sup> Furthermore, as we noted already, the Dictionary Act establishes that Congress uses “whoever” as a much broader term than “individual.” See 1 U.S.C. § 1.

Second, Thaler contends that AI software programs must qualify as inventors because otherwise patentability would depend on “the manner in which the invention was made,” in contravention of 35 U.S.C. § 103. Section 103 is not about inventorship. Instead, it provides, in relevant part, that inventions may still be nonobvious even if they are discovered during “routine” testing or experimentation. See *Honeywell Int’l Inc. v. Mexichem Amanco Holding S.A. de C.V.*, 865 F.3d 1348, 1356 (Fed. Cir. 2017); see also *Graham v. John Deere Co.*, 383 U.S. 1, 15 (1966) (explaining that second sentence of § 103 was intended to clarify that “flash of creative genius” is unnecessary for patentability). This statutory provision relates to *how* an invention is

---

<sup>5</sup> While the PTO also initially relied on the use of “whoever” in § 101 of the Patent Act, the PTO has also consistently explained that “individual” is limited to natural persons, a position we now uphold.

made and does not trump a provision that specifically addresses *who* may be an inventor.

Third, Thaler emphasizes that the term “inventor” must be interpreted with attention to the “context in which that language is used[] and the broader context of the statute as a whole.” *Yates v. United States*, 574 U.S. 528, 537 (2015) (internal quotation marks omitted). We have undertaken precisely this task. For the reasons explained above, the Patent Act, when considered in its entirety, confirms that “inventors” must be human beings.

## B

Our holding today that an “inventor” must be a human being is supported by our own precedent. *See Univ. of Utah v. Max-Planck-Gesellschaft zur Forderung der Wissenschaften E.V.*, 734 F.3d 1315, 1323 (Fed. Cir. 2013) (“[I]nventors must be *natural persons* and cannot be corporations or sovereigns.”) (emphasis added); *Beech Aircraft Corp. v. EDO Corp.*, 990 F.2d 1237, 1248 (Fed. Cir. 1993) (“[O]nly natural persons can be ‘inventors.’”). While these opinions addressed different questions – concluding that neither corporations nor sovereigns can be inventors – our reasoning did not depend on the fact that institutions are collective entities. The two cases confirm that the plain meaning of “inventor” in the Patent Act is limited to natural persons.

## C

Statutes are often open to multiple reasonable readings. Not so here. This is a case in which the question of statutory interpretation begins and ends with the plain meaning of the text. *See Bostock v. Clayton Cnty.*, 140 S. Ct. 1731, 1749 (2020) (“This Court has explained many times over many years, when the meaning of the statute’s terms is plain, our job is at an end.”). In the Patent Act, “individuals” – and, thus, “inventors” – are unambiguously natural persons. Accordingly, we have no need to consider

additional tools of statutory construction. *See Matal v. Tam*, 137 S. Ct. 1744, 1756 (2017) (“[I]nquiry into the meaning of the statute’s text ceases when the statutory language is unambiguous and the statutory scheme is coherent and consistent.”) (internal quotation marks omitted).

### III

We briefly address Thaler’s additional arguments.

Thaler argues that inventions generated by AI should be patentable in order to encourage innovation and public disclosure. Thaler’s policy arguments are speculative and lack a basis in the text of the Patent Act and in the record. In any event, the text before us is unambiguous, and we may not “elevate vague invocations of statutory purpose over the words Congress chose.” *Sw. Airlines Co. v. Saxon*, 142 S. Ct. 1783, 1792-93 (2022). Moreover, we are not confronted today with the question of whether inventions made by human beings with the *assistance* of AI are eligible for patent protection.

Thaler invokes the canon of constitutional avoidance. In Thaler’s view, permitting AI programs to be inventors would support the constitutional purpose of patents “[t]o promote the progress of science and the useful arts.” U.S. Const. art. I, § 8, cl. 8. It follows, Thaler continues, that not recognizing AI as an inventor undermines such progress, raising potential constitutional concerns we should be careful to avoid. Thaler is incorrect. The constitutional provision he cites is a grant of legislative power to Congress; Congress has chosen to act pursuant to that power by passing the Patent Act. Thaler does not (and cannot) argue that limiting inventorship to human beings is unconstitutional. Therefore, the canon of constitutional avoidance is simply inapplicable. *See Veterans4You LLC v. United States*, 985 F.3d 850, 860-61 (Fed. Cir. 2021) (explaining that this canon may be helpful when there is serious question regarding statute’s constitutionality); *see also*

*Warger v. Shauers*, 574 U.S. 40, 50 (2014) (noting that canon of constitutional avoidance “has no application in the absence of . . . ambiguity”) (internal quotation marks omitted).

Thaler also notes that South Africa has granted patents with DABUS as an inventor. This foreign patent office was not interpreting our Patent Act. Its determination does not alter our conclusion.

We have considered Thaler’s additional arguments and find they do not merit discussion.

#### IV

When a statute unambiguously and directly answers the question before us, our analysis does not stray beyond the plain text. Here, Congress has determined that only a natural person can be an inventor, so AI cannot be. Accordingly, the decision of the district court is affirmed.

### **AFFIRMED**

#### COSTS

Costs shall be assessed against Appellant.

## 2141 Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 [R-07.2022]

[Editor Note: This MPEP section is **applicable** to all applications. For applications subject to the first inventor to file (FITF) provisions of the AIA, the relevant time is "before the effective filing date of the claimed invention". For applications subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#), the relevant time is "at the time of the invention". *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005). See also [MPEP § 2150 \(s2150.html#ch2100\\_d2002f\\_22805\\_16e\)](#) et seq. Many of the court decisions discussed in this section involved applications or patents subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). These court decisions may be applicable to applications and patents subject to [AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#a1\\_d1fbe1\\_234ed\\_52\)](#) but the relevant time is before the effective filing date of the claimed invention and not at the time of the invention.]

### 35 U.S.C. 103 Conditions for patentability; non-obvious subject matter.

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in [section 102 \(mpep-9015-appx-l.html#a1\\_d1fbe1\\_234ed\\_52\)](#), if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

### Pre-AIA 35 U.S.C. 103 Conditions for patentability; nonobvious subject matter.

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in [section 102 \(mpep-9015-appx-l.html#d0e302383\)](#), if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

\*\*\*\*\*

### EXAMINATION GUIDELINES FOR DETERMINING OBVIOUSNESS UNDER 35 U.S.C. 103

These guidelines are intended to assist Office personnel to make a proper determination of obviousness under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#), and to provide an appropriate supporting rationale in view of the decision by the Supreme Court in *KSR International Co. v. Teleflex Inc. (KSR)*, 550 U.S. 398, 82 USPQ2d 1385 (2007). The guidelines are based on the Office's current understanding of the law, and are believed to be fully consistent with the binding precedent of the Supreme Court. The *KSR* decision reinforced earlier decisions that validated a more flexible approach to providing reasons for obviousness. However, the Supreme Court's pronouncement in *KSR* overruled cases such as *In re Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002), insofar as those cases require record evidence of an express reason to modify the prior art. As the Federal Circuit has explained:

At the time [of the decision in *In re Lee*], we required the PTO to identify record evidence of a teaching, suggestion, or motivation to combine references because "[o]mission of a relevant factor required by precedent is both legal error and arbitrary agency action." However, this did not preclude examiners from employing common sense. More recently [in *DyStar Textilfarben GmbH v. C.H. Patrick Co.*, 464 F.3d 1356, 1366 (Fed. Cir. 2006)], we explained that use of common sense does not require a "specific hint or suggestion in a particular reference," only a reasoned explanation that avoids conclusory generalizations.

*Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, 587 F.3d 1324, 1329, 92 USPQ2d 1849, 1854 (Fed. Cir. 2009) (citations omitted).

In another case, the Federal Circuit also stated that:

"... we conclude that while 'common sense' can be invoked, even potentially to supply a limitation missing from the prior art, it must still be supported by evidence and a reasoned explanation....[T]his is particularly true where the missing limitation goes to the heart of an invention."

*Arendi v. Apple*, 832 F.3d 1355, 1363, 119 USPQ2d 1822, 1827 (Fed. Cir. 2016).

These guidelines do not constitute substantive rule making and hence do not have the force and effect of law. They have been developed as a matter of internal Office management and are not intended to create any right or benefit, substantive or procedural, enforceable by any party against the Office. Rejections continue to be based upon the substantive law, and it is these rejections that are appealable. Consequently, any failure by Office personnel to follow the guidelines is neither appealable nor petitionable.

### I. THE KSR DECISION AND PRINCIPLES OF THE LAW OF OBVIOUSNESS

The Supreme Court in *KSR* reaffirmed the familiar framework for determining obviousness as set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), but stated that the Federal Circuit had erred by applying the teaching-suggestion-motivation (TSM) test in an overly rigid and formalistic way. *KSR*, 550 U.S. at 404, 82 USPQ2d at 1391. Specifically, the Supreme Court stated that the Federal Circuit had erred in four ways: (1) "by holding that courts and patent examiners should look only to

the problem the patentee was trying to solve” (*Id.* at 420, 82 USPQ2d at 1397); (2) by assuming “that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem” (*Id.*); (3) by concluding “that a patent claim cannot be proved obvious merely by showing that the combination of elements was ‘obvious to try’” (*Id.* at 421, USPQ2d at 1397); and (4) by overemphasizing “the risk of courts and patent examiners falling prey to hindsight bias” and as a result applying “[r]igid preventative rules that deny factfinders recourse to common sense” (*Id.*).

In *KSR*, the Supreme Court particularly emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” *Id.* at 415, 82 USPQ2d at 1395, and discussed circumstances in which a patent might be determined to be obvious. Importantly, the Supreme Court reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 415-16, 82 USPQ2d at 1395. The Supreme Court stated that there are “[t]hree cases decided after *Graham* [that] illustrate this doctrine.” *Id.* at 416, 82 USPQ2d at 1395. (1) “In *United States v. Adams*, . . . [t]he Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *Id.* (2) “In *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, . . . [t]he two [pre-existing elements] in combination did no more than they would in separate, sequential operation.” *Id.* at 416-17, 82 USPQ2d at 1395. (3) “[I]n *Sakraida v. AG Pro, Inc.*, the Court derived . . . the conclusion that when a patent simply arranges old elements with each performing the same function it had been known to perform and yields no more than one would expect from such an arrangement, the combination is obvious.” *Id.* at 417, 82 USPQ2d at 1395-96 (Internal quotations omitted.). The principles underlining these cases are instructive when the question is whether a patent application claiming the combination of elements of prior art would have been obvious. The Supreme Court further stated that:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, [§ 103 \(mpep-9015-appx-l.html#al\\_d1fbe1\\_19797\\_b0\)](#), likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Id.* at 417, 82 USPQ2d at 1396.

When considering obviousness of a combination of known elements, the operative question is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*

The Supreme Court’s flexible approach to the obviousness inquiry is reflected in numerous pre-*KSR* decisions; see [MPEP § 2144 \(s2144.html#d0e210576\)](#). That section provides many lines of reasoning to support a determination of obviousness based upon earlier legal precedent that had condoned the use of particular examples of what may be considered common sense or ordinary routine practice (e.g., making integral, changes in shape, making adjustable). Thus, the type of reasoning sanctioned by the opinion in *KSR* has long been part of the patent examination process.

## II. THE BASIC FACTUAL INQUIRIES OF *GRAHAM v. JOHN DEERE CO.*

An invention that would have been obvious to a person of ordinary skill at the relevant time is not patentable. See [35 U.S.C. 103 \(mpep-9015-appx-l.html#al\\_d1fbe1\\_19797\\_b0\)](#) or [pre-AIA 35 U.S.C. 103\(a\) \(mpep-9015-appx-l.html#d0e302450\)](#). As reiterated by the Supreme Court in *KSR*, the framework for the objective analysis for determining obviousness under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#) is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries enunciated by the Court are as follows:

- (A) Determining the scope and content of the prior art;
- (B) Ascertaining the differences between the claimed invention and the prior art; and
- (C) Resolving the level of ordinary skill in the pertinent art.

Objective evidence relevant to the issue of obviousness must be evaluated by Office personnel. *Id.* at 17-18, 148 USPQ at 467. Such evidence, sometimes referred to as “secondary considerations,” may include evidence of commercial success, long-felt but unsolved needs, failure of others, and unexpected results. The evidence may be included in the specification as filed, accompany the application on filing, or be provided in a timely manner at some other point during the prosecution. The weight to be given any objective evidence is determined on a case-by-case basis. The mere fact that an applicant has presented evidence does not mean that the evidence is dispositive of the issue of obviousness.

The question of obviousness must be resolved on the basis of the factual inquiries set forth above. While each case is different and must be decided on its own facts, these factual inquiries, as well as secondary considerations when present, must be analyzed. The *Graham* factors were reaffirmed and relied upon by the Supreme Court in its consideration and determination of obviousness in the fact situation presented in *KSR*, 550 U.S. at 406-07, 82 USPQ2d at 1391 (2007). The Supreme Court has utilized the *Graham* factors in each of its obviousness decisions since *Graham*. See *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 189 USPQ 449, *reh’g denied*, 426 U.S. 955 (1976); *Dann v. Johnston*, 425 U.S. 219, 189 USPQ 257 (1976); and *Anderson’s-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 163 USPQ 673 (1969). As stated by the Supreme Court in *KSR*, “While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.” *KSR*, 550 U.S. at 407, 82 USPQ2d at 1391.

### Office Personnel As Factfinders

Office personnel fulfill the critical role of factfinder when resolving the *Graham* inquiries. It must be remembered that while the ultimate determination of obviousness is a legal conclusion, the underlying *Graham* inquiries are factual. When making an obviousness rejection, Office personnel must therefore ensure that the written record includes findings of fact concerning the state of the art and the teachings of the references applied. In certain circumstances, it may also be important to include explicit findings as to how a person of ordinary skill would have understood prior art teachings, or what a person of ordinary skill would have known or could have done. Factual findings made by Office personnel are the necessary underpinnings to establish obviousness.

Once the findings of fact are articulated, Office personnel must provide an explanation to support an obviousness rejection under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#). [35 U.S.C. 132 \(mpep-9015-appx-l.html#d0e303187\)](#) requires that the applicant be notified of the reasons for the claim so that the applicant can decide how best to proceed. Clearly setting forth findings of fact and the rationale(s) to support a rejection in an Office action leads to the prompt resolution of issues pertinent to patentability.

In short, the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the relevant time, and on what such a person would have reasonably expected to have been able to do in view of that knowledge. This is so regardless of whether the source of that knowledge and ability was documentary prior art, general knowledge in the art, or common sense. What follows is a discussion of the *Graham* factual inquiries.

#### **A. Determining the Scope and Content of the Prior Art**

In determining the scope and content of the prior art, Office personnel must first obtain a thorough understanding of the invention disclosed and claimed in the application under examination by reading the specification, including the claims, to understand what has been invented. See [MPEP § 904 \(s904.html#d0e115569\)](#). The scope of the claimed invention must be clearly determined by giving the claims the “broadest reasonable interpretation consistent with the specification.” See *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316, 75 USPQ2d 1321, 1329 (Fed. Cir. 2005) and [MPEP § 2111 \(s2111.html#d0e200352\)](#). Once the scope of the claimed invention is determined, Office personnel must then determine what to search for and where to search.

##### **1. What To Search For:**

The search should cover the claimed subject matter and should also cover the disclosed features which might reasonably be expected to be claimed. See [MPEP § 904.02 \(s904.html#d0e115698\)](#). Although a rejection need not be based on a teaching or suggestion to combine, a preferred search will be directed to finding references that provide such a teaching or suggestion if they exist.

##### **2. Where To Search:**

Office personnel should continue to follow the general search guidelines set forth in [MPEP § 904 \(s904.html#d0e115569\)](#) to [§ 904.03 \(s904.html#d0e115840\)](#), regarding search of the prior art. Office personnel are reminded that, for purposes of [35 U.S.C. 103 \(mpep-9015-appx-1.html#d0e302450\)](#), prior art can be either in the field of the inventor's endeavor or be reasonably pertinent to the particular problem with which the inventor was concerned. See [MPEP § 2141.01\(a\) \(s2141.html#d0e208985\)](#) for a discussion of analogous art. Furthermore, prior art that is in a field of endeavor other than that of the inventor (as noted by the Court in *KSR*, “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one,” 550 U.S. at 417, 82 USPQ2d at 1396 (emphasis added)), or solves a problem which is different from that which the inventor was trying to solve, may also be considered for the purposes of [35 U.S.C. 103 \(mpep-9015-appx-1.html#d0e302450\)](#). (The Court in *KSR* stated that “[t]he first error...in this case was...holding that courts and patent examiners should look only to the problem the patentee was trying to solve. The Court of Appeals failed to recognize that the problem motivating the patentee may be only one of many addressed by the patent's subject matter...The second error [was]...that a person of ordinary skill attempting to solve a problem will be led only to those elements of prior art designed to solve the same problem.” 550 U.S. at 420, 82 USPQ2d at 1397. Federal Circuit case law prior to the Supreme Court's decision in *KSR* is generally in accord with these statements by the *KSR* Court. See e.g., *In re Dillon*, 919 F.2d 688, 693, 16 USPQ2d 1897, 1902 (Fed. Cir. 1990) (*en banc*) (“[I]t is not necessary in order to establish a *prima facie* case of obviousness that both a structural similarity between a claimed and prior art compound (or a key component of a composition) be shown and that there be a suggestion in or expectation from the prior art that the claimed compound or composition will have the same or a similar utility as one newly discovered by applicant”) (emphasis added); *In re Lintner*, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972) (“The fact that appellant uses sugar for a different purpose does not alter the conclusion that its use in a prior art composition would be *prima facie* obvious from the purpose disclosed in the references.”).

For a discussion of what constitutes prior art, see [MPEP § 901 \(s901.html#d0e110011\)](#) to [§ 901.06\(d\) \(s901.html#d0e113237\)](#) and [§ 2121 \(s2121.html#d0e201731\)](#) to [§ 2129 \(s2129.html#d0e202844\)](#). See [MPEP § 2141.01\(a\) \(s2141.html#d0e208985\)](#) for a discussion of analogous art.

#### **B. Ascertaining the Differences Between the Claimed Invention and the Prior Art**

Ascertaining the differences between the claimed invention and the prior art requires interpreting the claim language, see [MPEP § 2111 \(s2111.html#d0e200352\)](#), and considering both the invention and the prior art as a whole. See [MPEP § 2141.02 \(s2141.html#d0e209106\)](#).

#### **C. Resolving the Level of Ordinary Skill in the Art**

Any obviousness rejection should include, either explicitly or implicitly in view of the prior art applied, an indication of the level of ordinary skill. A finding as to the level of ordinary skill may be used as a partial basis for a resolution of the issue of obviousness.

The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the relevant time. Factors that may be considered in determining the level of ordinary skill in the art may include: (1) “type of problems encountered in the art;” (2) “prior art solutions to those problems;” (3) “rapidity with which innovations are made;” (4) “sophistication of the technology; and” (5) “educational level of active workers in the field.” *In re GPAC*, 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995). “In a given case, every factor may not be present, and one or more factors may predominate.” *Id.* See also *Custom Accessories, Inc. v. Jeffrey-Allan Indust., Inc.*, 807 F.2d 955, 962, 1 USPQ2d 1196, 1201 (Fed. Cir. 1986); *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696, 218 USPQ 865, 868 (Fed. Cir. 1983).

“A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton.” *KSR*, 550 U.S. at 421, 82 USPQ2d at 1397. “[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.” *Id.* at 420, 82 USPQ2d at 1397. Office personnel may also take into account “the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* at 418, 82 USPQ2d at 1396.

In addition to the factors above, Office personnel may rely on their own technical expertise to describe the knowledge and skills of a person of ordinary skill in the art. The Federal Circuit has stated that examiners and administrative patent judges on the Board are “persons of scientific competence in the fields in which they work” and that their findings are “informed by their scientific knowledge, as to the meaning of prior art references to persons of ordinary skill in the art.” *In re Berg*, 320 F.3d 1310, 1315, 65 USPQ2d 2003, 2007 (Fed. Cir. 2003). In addition, examiners “are assumed to have some expertise in interpreting the references and to be familiar from their work with the level of skill in the art.” *PowerOasis, Inc. v. T-Mobile USA, Inc.*, 522 F.3d 1299, 86 USPQ2d 1385 (Fed. Cir. 2008) (quoting *Am. Hoist & Derrick Co. v. Sowa & Sons*, 725 F.2d 1350, 1360, 220 USPQ 763, 770 (Fed. Cir. 1984)). See [MPEP § 2141.03 \(s2141.html#d0e209300\)](#) for a discussion of the level of ordinary skill.

### **III. RATIONALES TO SUPPORT REJECTIONS UNDER 35 U.S.C. 103**

Once the *Graham* factual inquiries are resolved, Office personnel must determine whether the claimed invention would have been obvious to one of ordinary skill in the art.

The obviousness analysis cannot be confined by . . . overemphasis on the importance of published articles and the explicit content of issued patents. . . . In many fields it may be that there is little discussion of obvious techniques or combinations, and it often may be the case that market demand, rather than scientific literature, will drive design trends. *KSR*, 550 U.S. at 419, 82 USPQ2d at 1396.

Prior art is not limited just to the references being applied, but includes the understanding of one of ordinary skill in the art. The prior art reference (or references when combined) need not teach or suggest all the claim limitations, however, Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. The "mere existence of differences between the prior art and an invention does not establish the invention's nonobviousness." *Dann v. Johnston*, 425 U.S. 219, 230, 189 USPQ 257, 261 (1976). The gap between the prior art and the claimed invention may not be "so great as to render the [claim] nonobvious to one reasonably skilled in the art." *Id.* In determining obviousness, neither the particular motivation to make the claimed invention nor the problem the inventor is solving controls. The proper analysis is whether the claimed invention would have been obvious to one of ordinary skill in the art after consideration of all the facts. See [35 U.S.C. 103 \(mpep-9015-appx-l.html#al\\_d1f1e1\\_19797\\_b0\)](#) or [pre-AIA 35 U.S.C. 103\(a\) \(mpep-9015-appx-l.html#d0e302450\)](#). Factors other than the disclosures of the cited prior art may provide a basis for concluding that it would have been obvious to one of ordinary skill in the art to bridge the gap. The rationales discussed below outline reasoning that may be applied to find obviousness in such cases.

If the search of the prior art and the resolution of the *Graham* factual inquiries reveal that an obviousness rejection may be made using the familiar teaching-suggestion-motivation (TSM) rationale, then such a rejection is appropriate. Although the Supreme Court in *KSR* cautioned against an overly rigid application of TSM, it also recognized that TSM was one of a number of valid rationales that could be used to determine obviousness. (According to the Supreme Court, establishment of the TSM approach to the question of obviousness "captured a helpful insight." 550 U.S. at 418, 82 USPQ2d at 1396 (citing *In re Bergel*, 292 F.2d 955, 956-57, 130 USPQ 206, 207-208 (1961)). Furthermore, the Court explained that "[t]here is no necessary inconsistency between the idea underlying the TSM test and the *Graham* analysis." 550 U.S. at 419, 82 USPQ2d at 1396. The Supreme Court also commented that the Federal Circuit "no doubt has applied the test in accord with these principles [set forth in *KSR*] in many cases." *Id.* Office personnel should also consider whether one or more of the other rationales set forth below support a conclusion of obviousness. The Court in *KSR* identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham*. *KSR*, 550 U.S. at 415-21, 82 USPQ2d at 1395-97. Note that the list of rationales provided below is not intended to be an all-inclusive list. Other rationales to support a conclusion of obviousness may be relied upon by Office personnel.

The key to supporting any rejection under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#) is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR* noted that the analysis supporting a rejection under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#) should be made explicit. The Court quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), stated that "[R]ejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at 418, 82 USPQ2d at 1396. Examples of rationales that may support a conclusion of obviousness include:

- (A) Combining prior art elements according to known methods to yield predictable results;
- (B) Simple substitution of one known element for another to obtain predictable results;
- (C) Use of known technique to improve similar devices (methods, or products) in the same way;
- (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;
- (E) "Obvious to try" – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- (F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;
- (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

See [MPEP § 2143 \(s2143.html#d0e209516\)](#) for a discussion of the rationales listed above along with examples illustrating how the cited rationales may be used to support a finding of obviousness. See also [MPEP § 2144 \(s2144.html#d0e210576\)](#) - [§ 2144.09 \(s2144.html#d0e212153\)](#) for additional guidance regarding support for obviousness determinations.

#### IV. APPLICANT'S REPLY

Once Office personnel have established the *Graham* factual findings and concluded, in view of the relevant evidence of record at that time, that the claimed invention would have been obvious, the burden then shifts to the applicant to (A) show that the Office erred in these findings or (B) provide other evidence to show that the claimed subject matter would have been nonobvious. [37 CFR 1.111\(b\) \(mpep-9020-appx-r.html#d0e322449\)](#) requires applicant to distinctly and specifically point out the supposed errors in the Office's action and reply to every ground of objection and rejection in the Office action. The reply must present arguments pointing out the specific distinction believed to render the claims patentable over any applied references.

If an applicant disagrees with any factual findings by the Office, an effective traverse of a rejection based wholly or partially on such findings must include a reasoned statement explaining why the applicant believes the Office has erred substantively as to the factual findings. A mere statement or argument that the Office has not established a *prima facie* case of obviousness or that the Office's reliance on common knowledge is unsupported by documentary evidence will not be considered substantively adequate to rebut the rejection or an effective traverse of the rejection under [37 CFR 1.111\(b\) \(mpep-9020-appx-r.html#d0e322449\)](#). Office personnel addressing this situation may repeat the rejection made in the prior Office action and make the next Office action final. See [MPEP § 706.07\(a\) \(s706.html#d0e68889\)](#).

#### V. CONSIDERATION OF APPLICANT'S REBUTTAL EVIDENCE

Office personnel should consider all rebuttal evidence that is timely presented by the applicants when reevaluating any obviousness determination. Rebuttal evidence may include evidence of "secondary considerations," such as "commercial success,



long felt but unsolved needs, [and] failure of others" (*Graham v. John Deere Co.*, 383 U.S. at 17, 148 USPQ at 467), and may also include evidence of unexpected results. As set forth above, Office personnel must articulate findings of fact that support the rationale relied upon in an obviousness rejection. As a result, applicants are likely to submit evidence to rebut the fact finding made by Office personnel. For example, in the case of a claim to a combination, applicants may submit evidence or argument to demonstrate that:

- (A) one of ordinary skill in the art could not have combined the claimed elements by known methods (e.g., due to technological difficulties);
- (B) the elements in combination do not merely perform the function that each element performs separately; or
- (C) the results of the claimed combination were unexpected.

Once the applicant has presented rebuttal evidence, Office personnel should reconsider any initial obviousness determination in view of the entire record. See, e.g., *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Eli Lilly & Co.*, 902 F.2d 943, 945, 14 USPQ2d 1741, 1743 (Fed. Cir. 1990). All the rejections of record and proposed rejections and their bases should be reviewed to confirm their continued viability. The Office action should clearly communicate the Office's findings and conclusions, articulating how the conclusions are supported by the findings. The procedures set forth in [MPEP § 706.07\(a\) \(s706.html#d0e68889\)](#) are to be followed in determining whether an action may be made final.

See [MPEP § 2145 \(s2145.html#d0e212553\)](#) concerning consideration of applicant's rebuttal evidence. See also [MPEP § 716 \(s716.html#d0e92085\)](#) to [§ 716.10 \(s716.html#d0e93797\)](#) regarding affidavits or declarations filed under [37 CFR 1.132 \(mpep-9020-appx-r.html#d0e323552\)](#) for purposes of traversing grounds of rejection.

## 2141.01 Scope and Content of the Prior Art [R-07.2022]

[Editor Note: This MPEP section is **applicable** to all applications. For applications subject to the first inventor to file (FITF) provisions of the AIA, the relevant time is "before the effective filing date of the claimed invention". For applications subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#), the relevant time is "at the time of the invention". *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005). See also [MPEP § 2150 \(s2150.html#ch2100 d2002f 22805 16e\)](#) et seq. Many of the court decisions discussed in this section involved applications or patents subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). These court decisions may be applicable to applications and patents subject to [AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#al d1fbe1 234ed 52\)](#) but the relevant time is before the effective filing date of the claimed invention and not at the time of the invention.]

### I. PRIOR ART AVAILABLE UNDER 35 U.S.C. 102 IS AVAILABLE UNDER 35 U.S.C. 103

"Before answering *Graham's* 'content' inquiry, it must be known whether a patent or publication is in the prior art under [35 U.S.C. § 102 \(mpep-9015-appx-l.html#d0e302383\)](#)." *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1568, 1 USPQ2d 1593, 1597 (Fed. Cir.), cert. denied, 481 U.S. 1052 (1987). Subject matter that is prior art under [35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#) can be used to support a rejection under [section 103 \(mpep-9015-appx-l.html#al d1fbe1 19797 b0\)](#). *Ex parte Andresen*, 212 USPQ 100, 102 (Bd. Pat. App. & Inter. 1981) ("it appears to us that the commentator [of 35 U.S.C.A.] and the [congressional] committee viewed [section 103 \(mpep-9015-appx-l.html#d0e302450\)](#) as including all of the various bars to a patent as set forth in [section 102 \(mpep-9015-appx-l.html#d0e302383\)](#).").

Furthermore, admitted prior art can be relied upon for both anticipation and obviousness determinations, regardless of whether the admitted prior art would otherwise qualify as prior art under the statutory categories of [35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). *Riverwood Int'l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354, 66 USPQ2d 1331, 1337 (Fed. Cir. 2003); *Constant v. Advanced Micro-Devices Inc.*, 848 F.2d 1560, 1570, 7 USPQ2d 1057, 1063 (Fed. Cir. 1988). See [MPEP § 2129 \(s2129.html#d0e202844\)](#) for discussion of admissions as prior art.

An obviousness rejection is ordinarily based on a disclosure that qualifies as prior art under [35 U.S.C. 102 \(mpep-9015-appx-l.html#al d1fbe1 234ed 52\)](#) or [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). If it is established that a disclosure does not qualify as prior art under an appropriate section of [35 U.S.C. 102 \(mpep-9015-appx-l.html#al d1fbe1 234ed 52\)](#), then the disclosure is also not prior art that can be used in an obviousness rejection. For instance, for a claimed invention subject to [35 U.S.C. 102 \(mpep-9015-appx-l.html#al d1fbe1 234ed 52\)](#), a [35 U.S.C. 102\(a\)\(2\) \(mpep-9015-appx-l.html#al d1d85b 11e72 315\)](#) reference used in an anticipation rejection but overcome by submitting a declaration under [37 CFR 1.130\(a\) \(mpep-9020-appx-r.html#d0e323473\)](#) cannot be used in an obviousness rejection. Likewise, for a claimed invention subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#), a [pre-AIA 35 U.S.C. 102\(a\) \(mpep-9015-appx-l.html#d0e302391\)](#) reference used in an anticipation rejection but overcome by submitting a declaration under [37 CFR 1.131 \(mpep-9020-appx-r.html#aia d0e323504\)](#) cannot be used in an obviousness rejection.

For an overview of what constitutes prior art under [35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#), see [MPEP § 901 \(s901.html#d0e110011\)](#) - [§ 901.06\(d\) \(s901.html#d0e113539\)](#), [§ 2121 \(s2121.html#d0e201731\)](#) - [§ 2129 \(s2129.html#d0e202844\)](#) and [§ 2151 \(s2151.html#ch2100 d2002f 22873 3d8\)](#) - [§ 2155 \(s2155.html#ch2100 d20034 16784 56\)](#).

### II. SUBSTANTIVE CONTENT OF THE PRIOR ART

See [MPEP § 2121 \(s2121.html#d0e201731\)](#) - [§ 2129 \(s2129.html#d0e202844\)](#) for case law relating to the substantive content of the prior art (e.g., availability of inoperative devices, extent to which prior art must be enabling, broad disclosure rather than preferred embodiments, admissions, etc.).

### III. CONTENT OF THE PRIOR ART IS DETERMINED AT THE RELEVANT TIME TO AVOID HINDSIGHT

The [pre-AIA 35 U.S.C. 103\(a\) \(mpep-9015-appx-l.html#d0e302450\)](#) requirement "at the time the invention was made" is to avoid impermissible hindsight. Likewise, the [AIA 35 U.S.C. 103 \(mpep-9015-appx-l.html#al d1fbe1 19797 b0\)](#) requirement "before the effective filing date of the claimed invention" serves the same purpose. See [MPEP § 2145 \(s2145.html#d0e212553\)](#), subsection X.A. for a discussion of rebutting applicants' arguments that a rejection is based on hindsight.

"It is difficult but necessary that the decisionmaker forget what he or she has been taught . . . about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art. . . ." *W.L.*

*Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

#### IV. PRE-AIA 35 U.S.C. 103(c) COMMON OWNERSHIP— REQUIRED FOR THE CONDITIONS OF PRE-AIA 35 U.S.C. 103(c)

An applicant subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#) who wants to avail himself or herself of the benefits of [pre-AIA 35 U.S.C. 103\(c\) \(mpep-9015-appx-l.html#d0e302450\)](#) has the burden of establishing that subject matter which only qualifies as prior art under subsection [\(e\) \(mpep-9015-appx-l.html#d0e302407\)](#), [\(f\) \(mpep-9015-appx-l.html#d0e302420\)](#) or [\(g\) \(mpep-9015-appx-l.html#d0e302424\)](#) of [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#) used in a rejection under [pre-AIA 35 U.S.C. 103\(a\) \(mpep-9015-appx-l.html#d0e302450\)](#) and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. Likewise, an applicant who wants to avail himself or herself of the benefits of the joint research provisions of [pre-AIA 35 U.S.C. 103\(c\) \(mpep-9015-appx-l.html#d0e302450\)](#) (for applications pending on or after December 10, 2004) has the burden of establishing that:

- (A) the claimed invention was made by or on behalf of parties to a joint research agreement that was in effect on or before the date the claimed invention was made;
- (B) the claimed invention was made as a result of activities undertaken within the scope of the joint research agreement; and
- (C) the application for patent for the claimed invention discloses or is amended to disclose the names of the parties to the joint research agreement.

This prior art disqualification is only applicable for subject matter which only qualifies as prior art under subsection [\(e\) \(mpep-9015-appx-l.html#d0e302407\)](#), [\(f\) \(mpep-9015-appx-l.html#d0e302420\)](#) or [\(g\) \(mpep-9015-appx-l.html#d0e302424\)](#) of [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#) used in a rejection under [pre-AIA 35 U.S.C. 103\(a\) \(mpep-9015-appx-l.html#d0e302450\)](#).

Note that for applications filed prior to November 29, 1999, and granted as patents prior to December 10, 2004, [pre-AIA 35 U.S.C. 103\(c\) \(mpep-9015-appx-l.html#d0e302450\)](#) is limited on its face to subject matter developed by another person which qualifies as prior art only under subsection (f) or (g) of [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). See [MPEP § 2146.01 \(s2146.html#ch2100\\_d2c184\\_126fa\\_f3\)](#). See also *In re Bartfeld*, 925 F.2d 1450, 1453-54, 17 USPQ2d 1885, 1888 (Fed. Cir. 1991) (Applicant attempted to overcome a [pre-AIA 35 U.S.C. 102\(e\) \(mpep-9015-appx-l.html#d0e302383\)](#)/[103 \(mpep-9015-appx-l.html#d0e302450\)](#) rejection with a terminal disclaimer by alleging that the public policy intent of [pre-AIA 35 U.S.C. 103\(c\) \(mpep-9015-appx-l.html#d0e302450\)](#) was to prohibit the use of “secret” prior art in obviousness determinations. The court rejected this argument, holding “We may not disregard the unambiguous exclusion of [§ 102\(e\) \(mpep-9015-appx-l.html#d0e302407\)](#) from the statute’s purview.”).

See [MPEP § 2146.02 \(s2146.html#ch2100\\_d2c184\\_12765\\_27\)](#) for the requirements which must be met to establish common ownership or a joint research agreement.

## 2141.01(a) Analogous and Nonanalogous Art [R-07.2022]

[Editor Note: This MPEP section is **applicable** to all applications. For applications subject to the first inventor to file (FITF) provisions of the AIA, the relevant time is “before the effective filing date of the claimed invention”. For applications subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#), the relevant time is “at the time of the invention”. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005). See also [MPEP § 2150 \(s2150.html#ch2100\\_d2002f\\_22805\\_16e\)](#) et seq. Many of the court decisions discussed in this section involved applications or patents subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). These court decisions may be applicable to applications and patents subject to [AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#al\\_d1f1be1\\_234ed\\_52\)](#) but the relevant time is before the effective filing date of the claimed invention and not at the time of the invention.]

### I. TO RELY ON A REFERENCE UNDER 35 U.S.C. 103, IT MUST BE ANALOGOUS PRIOR ART

In order for a reference to be proper for use in an obviousness rejection under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#), the reference must be analogous art to the claimed invention. *In re Bigio*, 381 F.3d 1320, 1325, 72 USPQ2d 1209, 1212 (Fed. Cir. 2004). A reference is analogous art to the claimed invention if: (1) the reference is from the same field of endeavor as the claimed invention (even if it addresses a different problem); or (2) the reference is reasonably pertinent to the problem faced by the inventor (even if it is not in the same field of endeavor as the claimed invention). Note that “same field of endeavor” and “reasonably pertinent” are two separate tests for establishing analogous art; it is not necessary for a reference to fulfill both tests in order to qualify as analogous art. See *Bigio*, 381 F.3d at 1325, 72 USPQ2d at 1212. The examiner must determine whether a reference is analogous art when analyzing the obviousness of the subject matter under examination. If a reference is not analogous art to the claimed invention, it may not be used in an obviousness rejection under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#). However, there is no analogous art requirement for a reference being applied in an anticipation rejection under [35 U.S.C. 102 \(mpep-9015-appx-l.html#al\\_d1f1be1\\_234ed\\_52\)](#). *In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997).

When determining whether the “relevant field of endeavor” test is met, the examiner should consider “explanations of the invention’s subject matter in the patent application, including the embodiments, function, and structure of the claimed invention.” *Airbus S.A.S. v. Firepass Corp.*, 941 F.3d 1374, 1380, 2019 USPQ2d 430083 (Fed. Cir. 2019) (quoting *Bigio*, 381 F.3d at 1325, 72 USPQ2d at 1212). When determining whether a prior art reference meets the “same field of endeavor” test for the analogous art, the primary focus is on what the reference discloses. *Airbus*, 41 F.3d at 1380. The examiner must consider the disclosure of each reference “in view of the ‘the reality of the circumstances.’” *Airbus*, 41 F.3d at 1380 (quoting *Bigio*, 381 F.3d at 1326, 72 USPQ2d at 1212). These circumstances are to be weighed “from the vantage point of the common sense likely to be exerted by one of ordinary skill in the art in assessing the scope of the endeavor.” *Airbus*, 41 F.3d at 1380. See also *Donner Technology, LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 2020 USPQ2d 11335 (Fed. Cir. 2020).

As for the “reasonably pertinent” test, the examiner should consider the problem faced by the inventor, as reflected - either explicitly or implicitly - in the specification. In order for a reference to be “reasonably pertinent” to the problem, it must “logically [] have commended itself to an inventor’s attention in considering his problem.” *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379-80 (Fed. Cir. 2007) (quoting *In re Clay*, 966 F.2d 656,658, 23 USPQ2d 1058, 1061 (Fed. Cir. 1992)). See also *In re Klein*,

647 F.3d 1343, 1348, 98 USPQ2d 1991, 1993 (Fed. Cir. 2011) An inventor is not expected to have been aware of all prior art outside of the field of endeavor. *Airbus*, 41 F.3d at 1380-82. A reference outside of the field of endeavor is reasonably pertinent if a person of ordinary skill would have consulted it and applied its teachings when faced with the problem that the inventor was trying to solve. *Airbus*, 41 F.3d at 1380-82. In order to support a determination that a reference is reasonably pertinent, it may be appropriate to include a statement of the examiner's understanding of the problem. The question of whether a reference is reasonably pertinent often turns on how the problem to be solved is perceived. If the problem to be solved is viewed in a narrow or constrained way, and such a view is not consistent with the specification, the scope of available prior art may be inappropriately limited. It may be necessary for the examiner to explain why an inventor seeking to solve the identified problem would have looked to the reference in an attempt to find a solution to the problem, i.e., factual reasons why the prior art is pertinent to the identified problem. See *Donner Tech., LLC v. Pro Stage Gear, LLC*, 979 F.3d 1353, 1359, 2020 USPQ2d 11335 (Fed. Cir. 2020) ("Thus, when addressing whether a reference is analogous art with respect to the claimed invention under a reasonable-pertinence theory, the problems to which both relate must be identified and compared.").

The Supreme Court's decision in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007), did not change the test for analogous art as stated in *Bigio*. Under *Bigio*, a reference need not be from the same field of endeavor as the claimed invention in order to be analogous art. *Bigio*, 381 F.3d at 1325, 72 USPQ2d at 1212. This is consistent with the Supreme Court's instruction in *KSR* that "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one." *KSR*, 550 U.S. at 417, 82 USPQ2d at 1396.

Any argument by the applicant that the examiner has misconstrued the problem to be solved, and as a result has improperly relied on nonanalogous art, should be fully considered in light of the specification. In evaluating the applicant's argument, the examiner should look to the teachings of the specification and the inferences that would reasonably have been drawn from the specification by a person of ordinary skill in the art as a guide to understanding the problem to be solved. A prior art reference not in the same field of endeavor as the claimed invention must be reasonably pertinent to the problem to be solved in order to qualify as analogous art and be applied in an obviousness rejection.

## II. CONSIDER SIMILARITIES AND DIFFERENCES IN STRUCTURE AND FUNCTION

While Patent Office classification of references and the cross-references in the official search notes of the class definitions are some evidence of "nonanalogy" or "analogy" respectively, the court has found "the similarities and differences in structure and function of the inventions to carry far greater weight." *In re Ellis*, 476 F.2d 1370, 1372, 177 USPQ 526, 527 (CCPA 1973) (The structural similarities and functional overlap between the structural gratings shown by one reference and the shoe scrapers of the type shown by another reference were readily apparent, and therefore the arts to which the reference patents belonged were reasonably pertinent to the art with which appellant's invention dealt (pedestrian floor gratings).).

## III. ANALOGY IN THE CHEMICAL ARTS

Examples of analogous art in the chemical arts include: *Ex parte Bland*, 3 USPQ2d 1103 (Bd. Pat. App. & Inter. 1986) (Claims were drawn to a particulate composition useful as a preservative for an animal foodstuff (or a method of inhibiting fungus growth in an animal foodstuff therewith) comprising verxite having absorbed thereon propionic acid. All references were concerned with absorbing biologically active materials on carriers, and therefore the teachings in each of the various references would have been pertinent to the problems in the other references and the invention at hand.); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983) (Problem confronting inventor was preventing electrostatic buildup in PTFE tubing caused by hydrocarbon fuel flow while precluding leakage of fuel. Two prior art references relied upon were in the rubber hose art, both referencing the problem of electrostatic buildup caused by fuel flow. The court found that because PTFE and rubber are used by the same hose manufacturers and experience the same and similar problems, a solution found for a problem experienced with either PTFE or rubber hosing would be looked to when facing a problem with the other.); *In re Mlot-Fijalkowski*, 676 F.2d 666, 213 USPQ 713 (CCPA 1982) (Problem faced by inventor was enhancement and immobilization of dye penetrant indications. References which taught the use of dyes and finely divided developer materials to produce colored images preferably in, but not limited to, the duplicating paper art were properly relied upon because the court found that inventor's problem was one of dye chemistry, and a search for its solution would include the dye arts in general.).

## IV. ANALOGY IN THE MECHANICAL ARTS

Examples of analogous art in the mechanical arts include: *Stevenson v. Int'l Trade Comm.*, 612 F.2d 546, 550, 204 USPQ 276, 280 (CCPA 1979) ("In a simple mechanical invention a broad spectrum of prior art must be explored and it is reasonable to permit inquiry into other areas where one of ordinary skill in the art would be aware that similar problems exist."). See also *In re Bigio*, 381 F.3d 1320, 1325-26, 72 USPQ2d 1209, 1211-12 (Fed. Cir. 2004). The patent application claimed a "hair brush" having a specific bristle configuration. The Board affirmed the examiner's rejection of the claims as being obvious in view of prior art patents disclosing toothbrushes. *Id.* at 1323, 72 USPQ2d at 1210. The appellant disputed that the patent references constituted analogous art. On appeal, the court upheld the Board's interpretation of the claim term "hair brush" to encompass any brush that may be used for any bodily hair, including facial hair. *Id.* at 1323-24, 72 USPQ2d at 1211. With this claim interpretation, the court applied the "field of endeavor test" for analogous art and determined that the references were within the field of the inventor's endeavor and hence were analogous art because toothbrushes are structurally similar to small brushes for hair, and a toothbrush could be used to brush facial hair. *Id.* at 1326, 72 USPQ2d at 1212.

Also see *In re Deminski*, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986) (Appellant's claims related to double-acting high pressure gas transmission line compressors in which the valves could be removed easily for replacement. The Board relied upon references which taught either a double-acting piston pump or a double-acting piston compressor. The court agreed that since the cited pumps and compressors have essentially the same function and structure, the field of endeavor includes both types of double-action piston devices for moving fluids.); *Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 227 USPQ 766 (Fed. Cir. 1985) (Claims at issue were directed to an instrument marker pen body, the improvement comprising a pen arm holding means having an integrally molded hinged member for folding over against the pen body. Although the patent owners argued the hinge and fastener art was nonanalogous, the court held that the problem confronting the inventor was the need for a simple holding means to enable frequent, secure attachment and easy removal of a marker pen to and from a pen arm, and one skilled in the pen art trying to solve that problem would have looked to the fastener and hinge art.); and *Ex parte Goodyear Tire & Rubber Co.*, 230 USPQ 357 (Bd. Pat. App. & Inter. 1985) (A reference in the clutch art was held reasonably pertinent to the friction problem faced by the inventor, whose claims were directed to a braking material, because brakes and clutches utilize interfacing materials to accomplish their respective purposes.).

## V. ANALOGY IN THE ELECTRICAL ARTS

See, for example, *Medtronic, Inc. v. Cardiac Pacemakers*, 721 F.2d 1563, 220 USPQ 97 (Fed. Cir. 1983) (Patent claims were drawn to a cardiac pacemaker which comprised, among other components, a runaway inhibitor means for preventing a pacemaker malfunction from causing pulses to be applied at too high a frequency rate. Two references disclosed circuits used in high power, high frequency devices which inhibited the runaway of pulses from a pulse source. The court held that one of ordinary skill in the pacemaker designer art faced with a rate-limiting problem would look to the solutions of others faced with rate limiting problems, and therefore the references were in an analogous art.).

## VI. EXAMPLES OF ANALOGY IN THE DESIGN ARTS

See [MPEP § 1504.03 \(s1504.html#d0e154792\)](#) for a discussion of the relevant case law setting forth the general requirements for analogous art in design applications.

For examples of analogy in the design arts, see *In re Rosen*, 673 F.2d 388, 213 USPQ 347 (CCPA 1982) (The design at issue was a coffee table of contemporary styling. The court held designs of contemporary furniture other than coffee tables, such as the desk and circular glass table top designs of the references relied upon, would reasonably fall within the scope of the knowledge of the designer of ordinary skill.); *Ex parte Pappas*, 23 USPQ2d 1636 (Bd. Pat. App. & Inter. 1992) (At issue was an ornamental design for a feed bunk with an inclined corner configuration. Examiner relied upon references to a bunk lacking the inclined corners claimed by appellant and the *Architectural Precast Concrete Drafting Handbook*. The Board found the *Architectural Precast Concrete Drafting Handbook* was analogous art, noting that a bunk may be a wood or concrete trough, and that both references relied upon "disclose structures in which at least one upstanding leg is generally perpendicular to a base portion to define a corner configuration between the leg and base portion."); *In re Butera*, 1 F.3d 1252, 28 USPQ2d 1399, 1400 (Fed. Cir. 1993) (unpublished - not citable as precedent) (The claimed invention, a spherical design for a combined insect repellent and air freshener, was rejected by the Board as obvious over a single reference to a design for a metal ball anode. The court reversed, holding the reference design to be nonanalogous art. "A prior design is of the type claimed if it has the same general use as that claimed in the design patent application . . . . One designing a combined insect repellent and air freshener would therefore not have reason to know of or look to a design for a metal ball anode.").

## 2141.02 Differences Between Prior Art and Claimed Invention [R-07.2022]

[Editor Note: This MPEP section is **applicable** to all applications. For applications subject to the first inventor to file (FITF) provisions of the AIA, the relevant time is "before the effective filing date of the claimed invention". For applications subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-I.html#d0e302383\)](#), the relevant time is "at the time of the invention". *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005). See also [MPEP § 2150 \(s2150.html#ch2100\\_d2002f\\_22805\\_16e\)](#), et seq. Many of the court decisions discussed in this section involved applications or patents subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-I.html#d0e302383\)](#). These court decisions may be applicable to applications and patents subject to [AIA 35 U.S.C. 102 \(mpep-9015-appx-I.html#al\\_d1fbc1\\_234ed\\_52\)](#) but the relevant time is before the effective filing date of the claimed invention and not at the time of the invention.]

Ascertaining the differences between the prior art and the claims at issue requires interpreting the claim language, and considering both the invention and the prior art references as a whole. See [MPEP § 2111 \(s2111.html#d0e200352\)](#) - [§ 2116.01 \(s2116.html#d0e201660\)](#) for case law pertaining to claim interpretation. See also [MPEP § 2143.03 \(s2143.html#d0e210501\)](#) for examples of types of claim language that may raise a question as to its limiting effect.

### I. THE CLAIMED INVENTION AS A WHOLE MUST BE CONSIDERED

In determining the differences between the prior art and the claims, the question under [35 U.S.C. 103 \(mpep-9015-appx-I.html#d0e302450\)](#) is not whether the differences themselves would have been obvious, but whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983) (Claims were directed to a vibratory testing machine (a hard-bearing wheel balancer) comprising a holding structure, a base structure, and a supporting means which form "a single integral and gaplessly continuous piece." *Nortron* argued the invention is just making integral what had been made in four bolted pieces, improperly limiting the focus to a structural difference from the prior art and failing to consider the invention as a whole. The prior art perceived a need for mechanisms to dampen resonance, whereas the inventor eliminated the need for dampening via the one-piece gapless support structure. "Because that insight was contrary to the understandings and expectations of the art, the structure effectuating it would not have been obvious to those skilled in the art." 713 F.2d at 785, 218 USPQ at 700 (citations omitted)).

See also *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) (Claims were directed to a three step process for preparing sweetened foods and drinks. The first two steps were directed to a process of producing high purity maltose (the sweetener), and the third was directed to adding the maltose to foods and drinks. The parties agreed that the first two steps were nonobvious but formed a known product and the third step was obvious. The Solicitor argued the preamble was directed to a process for preparing foods and drinks sweetened mildly and thus the specific method of making the high purity maltose (the first two steps in the claimed process) should not be given weight, analogizing with product-by-process claims. The court disagreed and held "due to the admitted unobviousness of the first two steps of the claimed combination of steps, the subject matter as a whole would not have been obvious to one of ordinary skill in the art at the time the invention was made." 535 F.2d at 69, 190 USPQ at 17 (emphasis in original). The preamble only recited the purpose of the process and did not limit the body of the claim. Therefore, the claimed process was a three step process, not the product formed by two steps of the process or the third step of using that product.).

### II. DISTILLING THE INVENTION DOWN TO A "GIST" OR "THRUST" OF AN INVENTION DISREGARDS "AS A WHOLE" REQUIREMENT

Distilling an invention down to the "gist" or "thrust" of an invention disregards the requirement of analyzing the subject matter "as a whole." *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) (restricting consideration of the claims to a 10% per second rate of stretching of unsintered PTFE and disregarding other limitations resulted in treating claims as though they read differently than allowed); *Bausch & Lomb v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 447-49, 230 USPQ 416, 419-20 (Fed. Cir. 1986), cert. denied, 484 U.S. 823 (1987) (District court focused on the "concept of forming ridgeless depressions having smooth rounded edges using a laser beam to vaporize the material," but

“disregarded express limitations that the product be an ophthalmic lens formed of a transparent cross-linked polymer and that the laser marks be surrounded by a smooth surface of unsublimated polymer.”). See also *Jones v. Hardy*, 727 F.2d 1524, 1530, 220 USPQ 1021, 1026 (Fed. Cir. 1984) (“treating the advantage as the invention disregards statutory requirement that the invention be viewed ‘as a whole’”); *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1 USPQ2d 1593 (Fed. Cir. 1987), *cert. denied*, 481 U.S. 1052 (1987) (district court improperly distilled claims down to a one word solution to a problem).

### III. DISCOVERING SOURCE/CAUSE OF A PROBLEM IS PART OF “AS A WHOLE” INQUIRY

“[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the ‘subject matter as a whole’ which should always be considered in determining the obviousness of an invention under [35 U.S.C. § 103 \(mpep-9015-appx-l.html#d0e302450\)](#).” *In re Spinnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969). However, “discovery of the cause of a problem . . . does not always result in a patentable invention. . . . [A] different situation exists where the solution is obvious from prior art which contains the same solution for a similar problem.” *In re Wiseman*, 596 F.2d 1019, 1022, 201 USPQ 658, 661 (CCPA 1979) (emphasis in original).

In *In re Spinnoble*, the claim was directed to a plural compartment mixing vial wherein a center seal plug was placed between two compartments for temporarily isolating a liquid-containing compartment from a solids-containing compartment. The claim differed from the prior art in the selection of butyl rubber with a silicone coating as the plug material instead of natural rubber. The prior art recognized that leakage from the liquid to the solids compartment was a problem, and considered the problem to be a result of moisture passing around the center plug because of microscopic fissures inherently present in molded or blown glass. The court found the inventor discovered the cause of moisture transmission was through the center plug, and there was no teaching in the prior art which would suggest the necessity of selecting applicant’s plug material which was more impervious to liquids than the natural rubber plug of the prior art.

In *In re Wiseman*, 596 F.2d at 1022, 201 USPQ at 661, claims directed to grooved carbon disc brakes wherein the grooves were provided to vent steam or vapor during a braking action to minimize fading of the brakes were rejected as obvious over a reference showing carbon disc brakes without grooves in combination with a reference showing grooves in noncarbon disc brakes for the purpose of cooling the faces of the braking members and eliminating dust, thereby reducing fading of the brakes. The court affirmed the rejection, holding that even if the inventor discovered the cause of a problem, the solution would have been obvious from the prior art which contained the same solution (inserting grooves in disc brakes) for a similar problem.

### IV. APPLICANTS ALLEGING DISCOVERY OF A SOURCE OF A PROBLEM MUST PROVIDE SUBSTANTIATING EVIDENCE

Applicants who allege the inventor discovered the source of a problem must provide evidence substantiating the allegation, either by way of affidavits or declarations, or by way of a clear and persuasive assertion in the specification. *In re Wiseman*, 596 F.2d 1019, 201 USPQ 658 (CCPA 1979) (unsubstantiated statement of counsel was insufficient to show appellants discovered source of the problem); *In re Kaslow*, 707 F.2d 1366, 217 USPQ 1089 (Fed. Cir. 1983) (Claims were directed to a method for redeeming merchandising coupons which contain a UPC “5-by-5” bar code wherein, among other steps, the memory at each supermarket would identify coupons by manufacturer and transmit the data to a central computer to provide an audit thereby eliminating the need for clearinghouses and preventing retailer fraud. In challenging the propriety of an obviousness rejection, appellant argued he discovered the source of a problem (retailer fraud and manual clearinghouse operations) and its solution. The court found appellant’s specification did not support the argument that he discovered the source of the problem with respect to retailer fraud, and that the claimed invention failed to solve the problem of manual clearinghouse operations.).

### V. DISCLOSED INHERENT PROPERTIES ARE PART OF “AS A WHOLE” INQUIRY

“In determining whether the invention as a whole would have been obvious under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#), we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question... but also to those properties of the subject matter which are inherent in the subject matter *and* are disclosed in the specification. . . . Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention *as a whole*, and not some part of it, which must be obvious under [35 U.S.C. 103 \(mpep-9015-appx-l.html#d0e302450\)](#).” *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6,8 (CCPA 1977) (emphasis in original) (citations omitted) (The claimed wastewater treatment device had a tank volume to contactor area of 0.12 gal./sq. ft. The court found the invention as a whole was the ratio of 0.12 and its inherent property that the claimed devices maximized treatment capacity regardless of other variables in the devices. The prior art did not recognize that treatment capacity was a function of the tank volume to contactor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also *In re Papesch*, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963) (“From the standpoint of patent law, a compound and all its properties are inseparable.”).

Obviousness cannot be predicated on what is not known at the time an invention is made, even if the inherency of a certain feature is later established. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993). See [MPEP § 2112 \(s2112.html#d0e201036\)](#) for the requirements of rejections based on inherency.

### VI. PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (Claims were directed to a process of producing a porous article by expanding shaped, unsintered, highly crystalline poly(tetrafluoroethylene) (PTFE) by stretching said PTFE at a 10% per second rate to more than five times the original length. The prior art teachings with regard to unsintered PTFE indicated the material does not respond to conventional plastics processing, and the material should be stretched slowly. A reference teaching rapid stretching of conventional plastic polypropylene with reduced crystallinity combined with a reference teaching stretching unsintered PTFE would not suggest rapid stretching of highly crystalline PTFE, in light of the disclosures in the art that teach away from the invention, i.e., that the conventional polypropylene should have reduced crystallinity before stretching, and that PTFE should be stretched slowly). *Allied Erecting v. Genesis Attachments*, 825 F.3d 1373, 1381, 119 USPQ2d 1132, 1138 (Fed. Cir. 2016) (“Although modification of the movable blades may impede the quick change functionality disclosed by Caterpillar, [a] given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine.” (quoting *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165, 77 USPQ2d 1865, 1870 (Fed. Cir. 2006) (citation omitted))).

However, "the prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed...." *In re Fulton*, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). See also [MPEP § 2123 \(s2123.html#d0e202024\)](#).

## 2141.03 Level of Ordinary Skill in the Art [R-07.2022]

[Editor Note: This MPEP section is **applicable** to all applications. For applications subject to the first inventor to file (FITF) provisions of the AIA, the relevant time is "before the effective filing date of the claimed invention". For applications subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#), the relevant time is "at the time of the invention". *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 75 USPQ2d 1321, 1326 (Fed. Cir. 2005). See also [MPEP § 2150 \(s2150.html#ch2100\\_d2002f\\_22805\\_16e\)](#) et seq. Many of the court decisions discussed in this section involved applications or patents subject to [pre-AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#d0e302383\)](#). These court decisions may be applicable to applications and patents subject to [AIA 35 U.S.C. 102 \(mpep-9015-appx-l.html#a1\\_d1f1be1\\_234ed\\_52\)](#) but the relevant time is before the effective filing date of the claimed invention and not at the time of the invention.]

### I. FACTORS TO CONSIDER IN DETERMINING LEVEL OF ORDINARY SKILL

The person of ordinary skill in the art is a hypothetical person who is presumed to have known the relevant art at the relevant time. Factors that may be considered in determining the level of ordinary skill in the art may include: (A) "type of problems encountered in the art;" (B) "prior art solutions to those problems;" (C) "rapidity with which innovations are made;" (D) "sophistication of the technology; and" (E) "educational level of active workers in the field. In a given case, every factor may not be present, and one or more factors may predominate." *In re GPAC*, 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995); *Custom Accessories, Inc. v. Jeffrey-Allan Indus., Inc.*, 807 F.2d 955, 962, 1 USPQ2d 1196, 1201 (Fed. Cir. 1986); *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696, 218 USPQ 865, 868 (Fed. Cir. 1983).

"A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421, 82 USPQ2d 1385, 1397 (2007). "[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 420, 82 USPQ2d 1397. Office personnel may also take into account "the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418, 82 USPQ2d at 1396.

The level of disclosure in the specification of the application under examination or in relevant references may also be informative of the knowledge and skills of a person of ordinary skill in the art. For example, if the specification is entirely silent on how a certain step or function is achieved, that silence may suggest that figuring out how to achieve that step or function is within the ordinary skill in the art, provided that the specification complies with [35 U.S.C. 112 \(mpep-9015-appx-l.html#d0e302824912\)](#). *Uber Techs., Inc. v. X One, Inc.*, 957 F.3d 1334, 1339, 2020 USPQ2d 10476 (Fed. Cir. 2020) ("The specification of the '593 patent is entirely silent on how to transmit user locations and maps from a server to a user's mobile device, suggesting that a person of ordinary skill in the art was more than capable of selecting between the known methods of accomplishing this. The '593 patent confirms that its invention, including any necessary plotting, 'utilizes existing platforms and infrastructure' and does not 'require development of new cell phone or PDA technology, nor do[es it] require development of new cellular communication infrastructure.'")

The "hypothetical 'person having ordinary skill in the art' to which the claimed subject matter pertains would, of necessity have the capability of understanding the scientific and engineering principles applicable to the pertinent art." *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Inter. 1988) (The Board disagreed with the examiner's definition of one of ordinary skill in the art (a doctorate level engineer or scientist working at least 40 hours per week in semiconductor research or development), finding that the hypothetical person is not definable by way of credentials, and that the evidence in the application did not support the conclusion that such a person would require a doctorate or equivalent knowledge in science or engineering.).

References which do not qualify as prior art because they postdate the claimed invention may be relied upon to show the level of ordinary skill in the art at or around the time the invention was made. *Ex parte Erlich*, 22 USPQ 1463, 1465 (Bd. Pat. App. & Inter. 1992). See also *Thomas & Betts Corp. v. Litton Sys., Inc.*, 720 F.2d 1572, 1580-81, 220 USPQ 1, 7 (Fed. Cir. 1983) ("Thus, the [unpublished internal materials], though not technically prior art, were, in effect, properly used as indicators of the level of ordinary skill in the art to which the invention pertained."). Moreover, documents not available as prior art because the documents were not accessible to the public may be used to demonstrate the level of ordinary skill in the art. For example, the document may be relevant to establishing "a motivation to combine which is implicit in the knowledge of one of ordinary skill in the art." *Nat'l Steel Car, Ltd. v. Can. Pac. Ry., Ltd.*, 357 F.3d 1319, 1337-38, 69 USPQ2d 1641, 1656 (Fed. Cir. 2004) (holding that a drawing made by an engineer that was not prior art can, nonetheless, "... be used to demonstrate a motivation to combine implicit in the knowledge of one of ordinary skill in the art").

### II. SPECIFYING A PARTICULAR LEVEL OF SKILL IS NOT NECESSARY WHERE THE PRIOR ART ITSELF REFLECTS AN APPROPRIATE LEVEL

If the only facts of record pertaining to the level of skill in the art are found within the prior art of record, the court has held that an invention may be held to have been obvious without a specific finding of a particular level of skill where the prior art itself reflects an appropriate level. *Chore-Time Equipment, Inc. v. Cumberland Corp.*, 713 F.2d 774, 218 USPQ 673 (Fed. Cir. 1983). See also *Okajima v. Bourdeau*, 261 F.3d 1350, 1355, 59 USPQ2d 1795, 1797 (Fed. Cir. 2001).

### III. ASCERTAINING LEVEL OF ORDINARY SKILL IS NECESSARY TO MAINTAIN OBJECTIVITY

"The importance of resolving the level of ordinary skill in the art lies in the necessity of maintaining objectivity in the obviousness inquiry." *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718, 21 USPQ2d 1053, 1057 (Fed. Cir. 1991). The examiner must ascertain what would have been obvious to one of ordinary skill in the art at the time the invention was made, and not to the inventor, a judge, a layman, those skilled in remote arts, or to geniuses in the art at hand. *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 218 USPQ 865 (Fed. Cir. 1983), *cert. denied*, 464 U.S. 1043 (1984).

[\[top\]\(#top\)](#)

This page is owned by Patents.

Last Modified: 02/16/2023 12:58:20

# NEW YORK Legal Ethics Reporter®

- EDITORIAL BOARD
- ABOUT
- CONTACT US
- RESOURCE:
- NYLER ARCHIVE
- NYPRR ARCHIVE
- PRIVACY POLICY
- TERMS OF USE



## Ethical Implications of Emergent Technologies

NYLER Archive

[Save](#) 
[pdf](#) 
[email](#) 
  
[cleanprint](#) 

By *Laurence Barville*

Emergent technologies have already altered our lives in unprecedented ways. For practicing attorneys, these innovations pose both risks and benefits. Perhaps the greatest risk is not remaining current on technological change relevant to a given attorney’s practice area. In coming years, the legal terrain may begin to shift in lock-step with technological change, even as the law struggles to adapt to and create appropriate rules governing the ethical implications of new developments.

Consider a surgeon who uses data transmitted by a wrist-based fitness tracker to diagnose patients. In the near future,

### SEARCH

### RECENT ARTICLES



Ethical Implications of Emergent Technologies



Ethical

Considerations When Switching from Criminal Defense to the Prosecution



Recent N.Y. Ethics Opinions:  
January/February 2017



Settlement Negotiations in Legal Malpractice Cases:  
Walking the Fine Line of a Conflict

### NYPRR ARCHIVE

### MEET THE EDITORS

**RON MINKOFF**  
 NYLER Editor & Chairman — Legal Ethics & Professional Responsibility Group  
 Frankfurt Kurnit  
 212-705-4837  
 rminkoff@fkks.com



[MEET THE EDITORIAL BOARD >](#)



a misdiagnosis will more often be caused by poorly-programmed algorithms than error-prone humans. Liability may change fundamentally. Who is ultimately responsible for a product's failure when design is less a matter of physical conformation than layers of interfacing software? If nothing else, the parties involved in any one products liability litigation could multiply exponentially.

## Technological Competence

Technologically-inept attorneys should take note. In 2013, the American Bar Association (ABA) approved a new resolution, incorporating technological proficiency as a core requirement for competent representation. The ABA Model Rules make clear that as attorneys, we owe clients a duty of competence. See ABA Model Rule 1.1 ("A lawyer shall provide competent representation to a client. Competent representation requires the legal knowledge, skill, thoroughness and preparation reasonably necessary for the representation.") While this is nothing new, being required to keep pace with a rapidly-changing technological landscape certainly is. As now set forth in Comment 8 to the ABA's Model Rule 1.1:

"To maintain the requisite knowledge and skill, a lawyer should keep abreast of changes in the law and its practice, *including the benefits and risks associated with relevant technology*, engage in continuing study and education and comply with all continuing legal education requirements to which the lawyer is subject." (*Emphasis added*).

To date, at least 25 states have adopted the American Bar Association's language on technological competency in their own ethical rules. New York's State Bar Association approved a similar change to its comments to New York Rule of Professional Conduct (RPC) 1.1 on March 28, 2015, but opted to clarify the duty. Per the Comment 8 to RPC 1.1, a New York attorney should:

"keep abreast of the benefits and risks associated with technology the lawyer uses to provide services to clients



Right

Why the  
"Stock"  
Decision Is  
Wrong —  
And Why It Is

or to store or transmit confidential information.”

While the ABA has said that this change should not “impose any new obligations” on practicing attorneys, the intent is clear: get with the times. See Jamie S. Gorelick & Michael Traynor, Report to the House of Delegates (2012), <http://www.americanbar.org/content/dam/aba/administrative/e/>

How proficient one should stay, though, is still something of a gray area. We cannot all be computer wizards, and the technologies considered “relevant,” and the degree of technological expertise an attorney needs, are likely to differ depending on an attorney’s practice area. Corporate attorneys, for example, would do well to understand the ramifications of using outdated encryption software to protect intellectual property. Few clients, on the other hand, would want or need an Alan Turing, the man who led the team that broke the German codes during World War II and the father of computer science, as their attorney in a personal injury matter.

## E-Discovery

As far as discovery of electronically stored information (ESI) is concerned, few questions will have simple answers. We are not, however, completely in the dark. While there are still some cases that live entirely on paper, there is no case that could not, at least potentially, involve ESI. Even so, a lot of attorneys are practicing in the Middle Ages, according to Robert Ambrogi at *Above the Law*, balking even at the concept of e-discovery. See Robert Ambrogi, “This Week in Legal Tech: Ethics and Technology Competence,” *Above the Law*, July 11, 2016, <http://abovethelaw.com/2016/07/this-week-in-legal-tech-ethics-and-technology-competence/>.

As a recent opinion (Formal Opinion No. 2015-193) from the State Bar of California Standing Committee on Professional Responsibility and Conduct makes clear, it is no longer acceptable to be a Luddite on this point:

“The ethical duty of competence requires an attorney to assess at the outset of each case what electronic discovery issues might arise during the litigation, including the likelihood that e-discovery will or should be sought by either side. If e-discovery will probably be sought, the duty of competence requires an attorney to assess his or her own e-discovery skills as part of the attorney’s duty to provide the client with competent representation. If an attorney lacks such skills and/or resources, the attorney must try to acquire sufficient learning and skill, or associate or consult with someone with expertise to assist.”

At the least, you should know that you do not know enough. Then ask for help. The California opinion suggests reaching out to other attorneys (either in your own firm or outside it), relevant software vendors or even your own client if they possess the necessary expertise. *Id.*

Where discovery misconduct is concerned, technological incompetence is unlikely to be a persuasive excuse. In response to an attorney who, after committing several e-discovery violations, said, “I have to confess to this court — I am not computer literate,” the Delaware Court of Chancery was unequivocal: “professed technological incompetence is not an excuse for discovery misconduct.” *James v. Natl. Fin. LLC*, No. 8931-VCL 2014 WL 6845560 (Del. Ch. Dec. 5, 2014). Delaware, it should be observed, is among the 25 states that have adopted the ABA’s change to the Rule 1.1 comment so far.

## **E-Mail Communications & Confidentiality**

This may not be an earth-shattering revelation, but it bears repeating. Keeping client information confidential has become increasingly complex. Access a café wireless connection anywhere on earth and your communications have likely become vulnerable to third-party interception. Similar vulnerabilities may exist in your own office, at least if

you currently use an unencrypted email service to communicate with clients.

Of course, interception of this sort is generally illegal, but when has something like the law ever stopped a hacker? While there is some debate as to whether the risk is more or less than that posed by traditional mail, ethics opinions clarify that lawyers generally may use email to communicate with their clients without running afoul of the ethics rules. See ABA Formal Op. 11-459 (2011). Nevertheless, law firms should take reasonable steps to ensure their email systems and data storage are secure. As Comment 17 to RPC 1.6 says:

“When transmitting a communication that relates to the representation of a client, the lawyer must take reasonable precautions to prevent the information from coming into the hands of unintended recipients. This duty does not require that the lawyer use special security measures if the method of communication affords a reasonable expectation of privacy. Special circumstances, however, may warrant special precautions. Factors to be considered in determining the reasonableness of a lawyer’s expectation of confidentiality include the sensitivity of the information and the extent to which the privacy of the information is protected by law or a confidentiality agreement.”

In any event, even in the absence of the need for special protections, it’s a good idea to warn clients ahead of time that emails are vulnerable to third-party interception. Then act reasonably to safeguard any information relating to the representation. Where additional precautions may be necessary; encryption is a strong option, if not a requirement.

## **Security & Confidentiality in an Interconnected World**

Think you, and your client’s confidential information, won’t be singled out by unscrupulous techno-savants? Not all of us will be, but it’s extraordinarily difficult to predict who or what hackers will target. It’s not as if these people are sitting down

at their computers, finding unsecured web devices and attempting to gain access one-by-one. Software programs are ceaselessly scouring the internet for open web ports and our assumption should be that anything connected to the internet is vulnerable.

It turns out that even toasters are targets. In a recent test case, a reporter at The Atlantic created a virtual toaster using Amazon's rental servers, mimicking the features of an unsecured web device. The "toaster" became victim to its first hack attempt within 41 minutes. The second attack came 14 minutes later. See Andrew McGill, "The Inevitability of Being Hacked," *The Atlantic*, Oct. 28, 2016, <http://www.theatlantic.com/technology/archive/2016/10/we-built-a-fake-web-toaster-and-it-was-hacked-in-an-hour/505571/>.

If you think the idea of a web-connected toaster seems fanciful, think again. In fact, we already have one, although it's only a prototype and something of a joke. It's called Brad, and Brad's very existence is prophetic. While Brad appears to be a normal household appliance, the toaster is actually linked to a network of similarly-interconnected kitchenwares. Choose to neglect Brad and he'll complain, shaking his handle in frustration. Brad even has the capability to put himself up for sale on the internet. See Kyle VanHemert, "A Toaster That Begg You to Use It: Welcome to the Bizarro Smart Home," *Wired*, March 17, 2014, <https://www.wired.com/2014/03/addicted-products/>.

It is not paranoid fantasy to suppose that, in the near future, everything, no matter how mundane, will be connected in some way to every other thing. A connection is, if nothing else, an avenue for entry, and thus a threat to confidential information.

Ensuring client confidentiality in an interconnected world will be difficult, unless you keep every client file on a dusty desktop that doesn't have internet access.

## The Internet of Things

On Oct. 21, 2016, Twitter, Amazon, Airbnb and Spotify were all brought down by a sophisticated distributed denial of service attack (DDoS). In a traditional DDoS attack, hackers enlist a mob of “zombie” (essentially hijacked) computers to overwhelm sites with floods of traffic. Twitter, however, was disrupted by traffic coming from things, an Internet of Things. See Kif Leswing, “A Massive Cyberattack Knocked Out Major Websites Across the Internet,” *Business Insider*, Oct. 21, 2016, <http://www.businessinsider.com/amazon-spotify-twitter-github-and-etsy-down-in-apparent-dns-attack-2016-10>.

DVR devices, wireless routers, CCTV cameras, most recent home appliances — anything with a processor — will do. In fact, the web-connected devices recently used to shut down some of the internet’s most popular sites happen to be older, and less-protected, than those currently sitting in the homes of many Americans.

There are now more web-connected devices on earth than human beings. See Rod Soderberry, “How Many Things Are Currently Connected to the “Internet of Things” (IOT)?”, *Forbes*, Jan. 17, 2013, <http://www.forbes.com/sites/quora/2013/01/07/how-many-things-are-currently-connected-to-the-internet-of-things-iot/> – 5648fa4d6379. The Internet of Things, a concept deftly characterized as “integration and interconnection of sensors and controls in a broad range of Internet-enabled devices, some paired with living things” by trial lawyer and computer forensic examiner Craig Ball, will only become more complex. See Craig Ball, “The Internet of Things Meets the Four Stages of Attorney E-Grief,” *Ball in Your Court*, Sept. 25, 2016, <https://ballinyourcourt.wordpress.com/2016/09/25/the-internet-of-things-meets-the-four-stages-of-attorney-e-grief/>. As it does, this emergent — and thoroughly new — interconnected world will change not only our duties surrounding client confidentiality, but the very practice of law itself.

## Data Is Here to Stay

While the Internet of Things is unlikely to impact the IT operations of law firms directly, radically increased connectivity could have a significant effect on many of our cases. So will drastic increases in the amount of data being collected, often of a very sensitive nature. Social media evidence has already had an effect on innumerable cases.

Take the case of Kathleen Romano as an example. In 2010, Romano sued Michigan-based furniture manufacturer Steelcase, arguing that her fall from a “defective” chair had led to severe personal injuries. Romano’s ample use of “smiley faces” on MySpace told a different story, Steelcase contended. And while Romano claimed to be “homebound,” pictures posted to her daughter’s Facebook account showed the family enjoying a trip to Florida soon after the alleged accident had occurred. New York’s Supreme Court granted Steelcase access to Romano’s “current and historical” social media accounts, “including all deleted pages.” Six years later, the suit remains in litigation. *Romano v. Steelcase Inc.*, 30 Misc 3d 426 (NY Sup. Ct. Sept. 21, 2010).

Will courts consider the personal data gathered by devices within the Internet of Things similarly discoverable? If determining the facts at issue is a goal, there is no reason to think it would not be in the appropriate case.

Determining whether or not a vehicle was malfunctioning during an accident will be simple. Or maybe the driver was checking his Facebook account just before the crash. Or maybe the vehicle repeatedly alerted him to signs of danger, but these warnings were ignored. All of these facts are, or soon will be, readily discoverable.

Similarly, the way that people track, assess and modify their own physical health is rapidly changing. Fitbit, Jawbone and other fitness trackers are likely to begin having a major impact on personal injury and workplace liability cases. Is your client wearing a Fitbit now? Sufficiently advanced, such technology could provide credible evidence as to the extent of her physical injuries, or that her injuries led to altered brain states, correlates of psychological trauma.

Once this regime takes hold, attorneys will have an unprecedented array of granular and accurate evidence at hand. Disparate streams of data will not, of their own accord, coalesce into a coherent picture, but with creativity and a good grasp of technology, attorneys will find new ways to tell compelling stories.

---

*Laurence P. Banville is the Managing Partner at [Banville Law](#), a personal injury firm in Manhattan.*

**DISCLAIMER:** This article provides general coverage of its subject area and is presented to the reader for informational purposes only with the understanding that the laws governing legal ethics and professional responsibility are always changing. The information in this article is not a substitute for legal advice and may not be suitable in a particular situation. Consult your attorney for legal advice. *New York Legal Ethics Reporter* provides this article with the understanding that neither New York Legal Ethics Reporter LLC, nor Frankfurt Kurnit Klein & Selz, nor Hofstra University, nor their representatives, nor any of the authors are engaged herein in rendering legal advice. New York Legal Ethics Reporter LLC, Frankfurt Kurnit Klein & Selz, Hofstra University, their representatives, and the authors shall not be liable for any damages resulting from any error, inaccuracy, or omission.

E-Discovery    E-Mail Confidentiality    Lawrence  
Banville    Security & Confidentiality    Technological  
Competence

#### RELATED POSTS

---

#### ABOUT THE AUTHOR: ADMIN

---





« Ethical Considerations  
When Switching from  
Criminal Defense to the  
Prosecution

Recent N.Y. Ethics  
Opinions: March/April 2017  
»

Need help? Email us at [nylerhelp@newyorklegaethics.com](mailto:nylerhelp@newyorklegaethics.com)

Use this button to switch between dark and light mode.

Lexis+ AI

Lexis+ AI is here,  
have you seen it?  
Transform your legal work

See How

1 in 6 US adults have already consulted Generative AI like ChatGPT for legal advice

GET THE REPORT NOW →



### Latest Blogs

[October 25, 2023](#)

#### How AI Can Assist Lawyers with Client Correspondence

How AI Can Assist Lawyers with Client Correspondence The legal industry has now moved past the hype surrounding the emergence of generative artificial intelligence (AI) technology as we dive into practical...

[October 25, 2023](#)

#### How Generative AI Can Enhance Legal Research Responsibly

intelligence (AI) technology and taking a clear-eyed...

[October 23, 2023](#)

## **Antitrust Healthcare Guidelines for Small Firm Counsel**

Summary: Developing a Strong Antitrust Foundation Cost-Effective Risk Assessment Leveraging Agency Precedent for Smaller Clients Building Relationships with Specialists Avoiding Small Firm...

[October 20, 2023](#)

## **Navigating Healthcare's Cybersecurity Challenges: Unveiling...**

The convergence of cybersecurity and cyber technology is an important issue in the fast-changing world of healthcare, where cutting-edge technology enhances patient care and research. The healthcare sector...

[October 18, 2023](#)

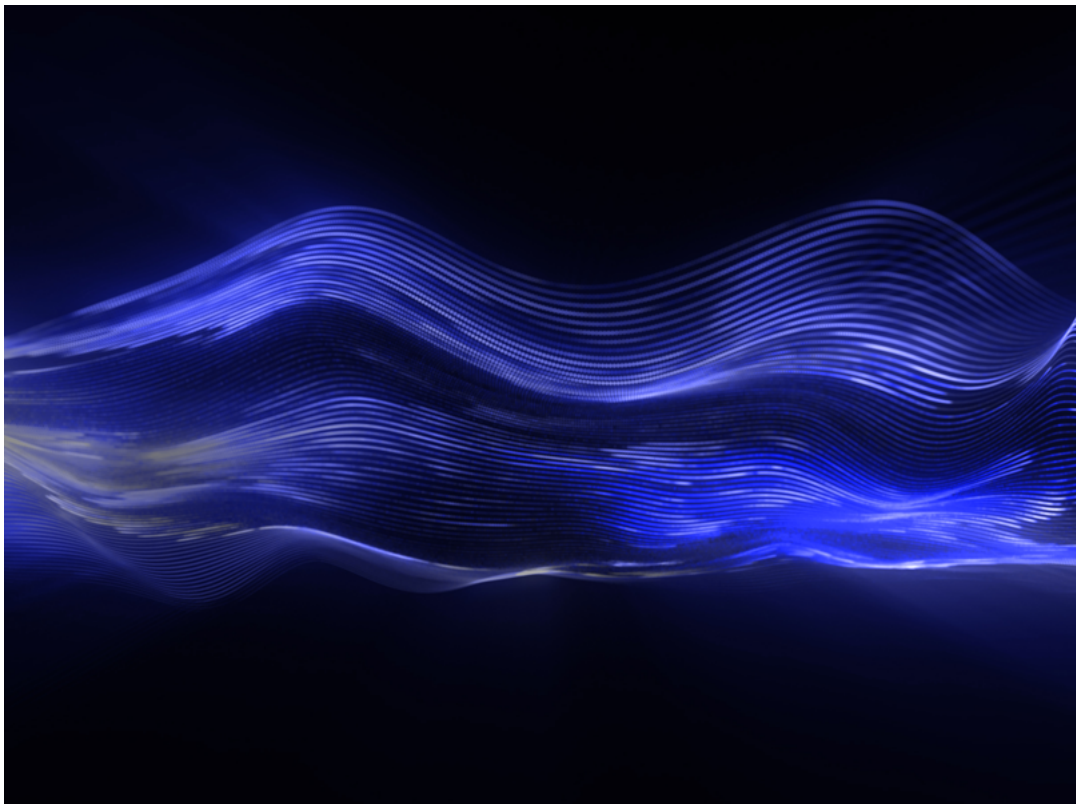
## **Antitrust in Healthcare: An Overview of Issues for Attorneys**

Summary: Mergers and Acquisitions Anticompetitive Conduct Insurance and ACO Antitrust Navigating Antitrust Agencies and Regulations Role of

# AI Terms for Legal Professionals: Understanding What Powers Legal Tech

March 20, 2023

(6 min read)



The legal technology landscape is evolving rapidly in front of our eyes, creating a whole new vocabulary of AI-related terms and phrases. For those of us who aren't product developers or software engineers, it's helpful to define what these terms mean. This user guide is designed to equip you with a better understanding of key AI concepts.

- [The Basics](#)

## The Basics

- **Algorithm:** a coded set of instructions for software that solves a problem or performs a computation.
- **Artificial Intelligence (AI):** computer software and systems that learn, plan, reason or process natural language as they go rather than only relying on pre-programmed tasks, i.e., speech recognition, computer vision, translation between (natural) languages, as well as other mappings of inputs.
- **Natural Language Processing (NLP):** a type of AI used to analyze, understand, and generate human language. For legal documents, NLP analyzes legal documents, contracts, and other legal texts to identify key provisions, clauses, and risks.
- **Semantic Search:** a search that weighs not only the keywords but also the context and intent behind the search query, which is critical in legal analysis, i.e., Lexis+.
- **Machine Learning (ML):** a subfield of artificial intelligence, which is broadly defined as the capability of a machine to learn without being explicitly programmed. Machine learning algorithms build a model based on sample data, i.e., training data, to make predictions or decisions without being explicitly programmed to do so.
- **Data Analytics:** the process of automating data analysis through machine learning to target critical insights and actionable intelligence faster and with higher accuracy.
- **Deep Learning:** a type of machine learning leveraging neural networks to learn by example, much like a human.

model, and an output layer, which produces the output. Each layer consists of neurons. Each neuron receives input from the other neurons, processes it, and produces output.

- **Constitutional AI:** a method for ensuring that AI systems are in sync with human values. This is a term used by researchers to describe the controls they've built to ensure that their AI systems behave ethically.

## Extractive vs Generative AI

- **Extractive AI:** an AI algorithm that extracts relevant data points from the data it has been trained on, i.e., [Lexis Answers](#), [Brief Analysis](#), [Fact & Issue Finder](#), and many other LexisNexis products.
- **Generative AI:** an algorithm that generates new outputs based on the data it has been trained on. Unlike extractive AI systems designed to recognize patterns, extract pre-existing data, and make predictions, generative AI creates new content in the form of images, text, audio, and more.

## Large Language Models

- **Large Language Model (LLM):** a machine learning model that can recognize, summarize, translate, predict, analyze sentiment, and generate text based on the patterns and relationships (probabilities) it has learned from massive datasets. LLMs work by predicting the next term, or word, in a sentence, given the words that came before it. LexisNexis leverages many highly trained LLMs to help users surface critical insights faster in Lexis Answers, Brief Analysis, Fact & Issue Finder, and many others.
- **Bidirectional Encoder Representations (BERT):** a ML and NLP framework that analyzes nuanced, niche language and context with a high degree of accuracy. LexisNexis has trained BERT technology on all things legal and leverages it across Lexis+.

manner.

- **Chatbot:** a software program that conducts conversational interactions with humans through text or voice, allowing humans to interact with digital devices as if communicating with a real person. It can be as simple as a rudimentary program answering basic questions with a brief response or as sophisticated as a conversational assistant holding a long, nuanced conversation, discerning complex intentions of its human users, and learning and evolving to deliver increased levels of personalization.
- **GPT:** Generative Pretrained Transformer is a family of AI language models introduced by OpenAI. These models can be fine-tuned for various natural language processing tasks, such as text generation, language translation, and text classification. The "pre-training" in its name refers to the initial training process on a large text collection where the model learns to predict the next word in a passage, which provides a solid foundation for the model to perform well on downstream tasks with limited amounts of task-specific data.
- **ChatGPT:** an artificial intelligence chatbot launched by OpenAI in November 2022. It is built on top of OpenAI's GPT-3.5 using supervised learning as well as reinforcement learning. Although the core function of a chatbot is to mimic a human conversation, ChatGPT is versatile and acts as Generative AI. For example, it can write and debug computer programs, compose music, teleplays, fairy tales, and student essays; answer test questions (sometimes, depending on the test, at a level above the average human test-taker) and more.
- **GPT-3:** the third-generation language prediction model in the GPT series introduced in May 2020 by OpenAI. It is an autoregressive language model, i.e., it predicts future outcomes using what it has previously observed and produces human-like text. LexisNexis leverages secure GPT-3 technology today.
- **GPT-4:** the fourth-generation language prediction model in the GPT series introduced in March 2023 by OpenAI is multimodal and accepts both image and text inputs to ultimately produce text.



**Legal Insights****FREE TRIAL**

Featured

Resources

Support

attorneys, courts, and more and provides insights into actionable trends and patterns, i.e., [Litigation Analytics](#) and [Lex Machina](#).

- **Legal Research:** AI-powered legal research tools to help lawyers and legal professionals efficiently find relevant case law, statutes, and regulations, i.e., [Lexis+](#).
- **Contract Analysis and Management:** AI tools can help automate contract review, identify clauses that require attention, and manage the lifecycle of a contract, i.e., [CounselLink with Parley Pro](#).
- **Intellectual Property:** AI can help automate the process of patent searches, prior art searches, and trademark searches, i.e., [LexisNexis IP solutions](#).
- **Risk Assessment:** AI tools can help assess risk in contracts, transactions, and legal decisions, i.e., [Lexis Create](#), which is launching in the US soon.
- **Sentiment Analysis:** This involves using NLP to analyze legal documents, social media, and news sources to identify sentiment around a particular legal issue or case, i.e., [Newsdesk](#).

The legal technology landscape is shifting quickly, and LexisNexis is poised to support the legal industry with state-of-the-art AI-enabled technology that helps users find actionable insights faster where and when they need them. Learn more about our [latest survey](#) that shows 39% of lawyers, 46% of law students and 45% of consumers agree that generative AI tools will significantly transform the practice of law.

TAGS:

**AI LEGAL RESEARCH LEGAL TECHNOLOGY LEGAL ANALYTICS****ALSO OF INTEREST**

The Power Of Artificial Intelligence In Legal Research

**Legal Insights**

**FREE TRIAL**


Featured Resources Support

**CONTACT SALES**

 **888-AT-LEXIS**


 **ONLINE FORM**

**CONTACT SUPPORT**

 **800-543-6862**

 **SUPPORT PAGE**

**SECURITY FREEZE**

 **800-456-6004**

 **SERVICE PORTAL**

Please visit our [Training & Support Center](#) or [Contact Us](#) for assistance

**ABOUT US**

- Our Company
- Our Leadership
- Careers at LexisNexis
- News & Events
- Our Values
- Advancing the Rule of Law

**TOP PRODUCTS**

- Lexis+ AI™
- Lexis+®
- Lexis®
- Practical Guidance
- Law360®
- Nexis®
- Litigation Analytics
- [VIEW ALL](#)

**PRODUCT SIGN-IN**

- Lexis+ AI™
- Lexis+®
- Lexis®
- Practical Guidance
- Law School Portal
- Nexis®
- [VIEW ALL](#)




**SUPPORT & TRAINING**

- Lexis+® Support
- Lexis® Support
- Practical Guidance Support
- Nexis® Support

**POLICIES**

- Privacy Policy
- Consumer Access
- Terms & Conditions
- Cookie Settings

**FOLLOW US**

-  LinkedIn
-  Facebook
-  Twitter

**FREE TRIAL**

Featured

Resources

Support

