

Appeal Nos. 20-1760, -1803

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

YANBIN YU, ZHONGXUAN ZHANG,

Plaintiffs-Appellants,

v.

APPLE INC.

Defendant-Appellee.

Appeal from the United States District Court,
Northern District of California in Case No. 3:18-cv-06181-JD,
Judge James Donato

YANBIN YU, ZHONGXUAN ZHANG,

Plaintiffs-Appellants,

v.

SAMSUNG ELECTRONICS CO. LTD., SAMSUNG
ELECTRONICS AMERICA, INC.,

Defendants-Appellees.

Appeal from the United States District Court,
Northern District of California in Case No. 3:18-cv-06339-JD,
Judge James Donato

**CORRECTED PETITION FOR REHEARING EN BANC OF
PLAINTIFFS-APPELLANTS YANBIN YU AND ZHONGXUAN ZHANG**

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Dated: July 12, 2021

Counsel for Plaintiffs-Appellants

CERTIFICATE OF INTEREST

Counsel for Appellants Yanbin Yu and Zhongxuan Zhang certify the following:

1. The full names of the parties represented by me are:

Yanbin Yu and Zhongxuan Zhang

2. The names of the real parties in interest represented by me are:

Yanbin Yu and Zhongxuan Zhang

3. All parent corporations and publicly held companies that own 10% or more of stock in the parties represented by me are:

None

4. The names of all law firms and the partners or associates that appeared for the party now represented by me in the trial court or agency or are expected to appear in this court (and who have not or will not enter an appearance in this case) are:

Dan Johnson Law Group, LLP: Nathan W. McCutcheon, Mario

Moore

5. The title and number of any case known to counsel to be pending in this or any other court or agency that will directly affect or be directly affected by this court's decision in the pending appeal:

The patent at issue in this appeal was also the subject of a pair of *inter partes* review proceedings before the Patent Trial and Appeal Board (“PTAB”) of the United States Patent and Trademark Office (“USPTO”): *Apple Inc. v. Yanbin Yu, et al.*, IPR2019-01258; *Samsung Electronics Co., Ltd., et al. v. Yanbin Yu, et al.*, IPR2020-00492. A decision in those proceedings was issued by the PTAB on January 5, 2021, and that decision is presently on appeal to this Court in consolidate Case Nos. 2021-1723, 2021-1724, and 2021-1766.

6. All information required by Fed. R. App. P. 26.1(b) and (c) that identifies organizational victims in criminal cases and debtors and trustees in bankruptcy cases:

None

Dated: July 12, 2021

/s/ Daniel Johnson Jr.
Daniel Johnson Jr.

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STATEMENT OF COUNSEL

Based on my professional judgment, I believe this appeal requires an answer to one or more precedent-setting questions of exceptional importance:

- 1) Whether the specific requirements recited in the language of a claim can be disregarded in determining the “focus” of the claim under step one of the *Alice/Mayo* test for patent-eligibility.
- 2) Whether a claimed combination of non-abstract (*e.g.*, structural) limitations that has not been shown to exist in the prior art can be found to be “generic” and “conventional.”
- 3) Whether a court can make adverse findings of fact against the non-moving party at the pleadings stage that are inconsistent with the patent specification, the file history, and/or plausible allegations in the complaint.
- 4) Whether a claim that presents no danger of preempting an “abstract idea,” either generally or in a particular field of use or technological environment, can be found ineligible for patent protection under 35 U.S.C. § 101.

Based on my professional judgment, I believe the decision of the panel is contrary to at least the following decisions of the Supreme Court of the United States and precedents of this Court: *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208 (2014);

Mayo Collaborative Servs. v. Prometheus Labs., Inc., 566 U.S. 66 (2012); *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016); *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253 (Fed. Cir. 2017); *Thales Visionix Inc. v. United States*, 850 F.3d 1343 (Fed. Cir. 2017); *Diamond v. Diehr*, 450 U.S. 175 (1981); *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016); and, *Amdocs (Israel) Limited v. Openet Telecom, Inc.*, 841 F.3d 1288 (2016).

Dated: July 12, 2021

/s/ Daniel Johnson Jr.
Daniel Johnson Jr.

PRELIMINARY STATEMENT

The panel majority upheld the district court’s dismissals—at the pleadings stage—of the two cases in this consolidated appeal on the ground that the following claim is ineligible for patent protection under 35 U.S.C. § 101:

1. An improved digital camera comprising:

a first and a second image sensor closely positioned with respect to a common plane, said second image sensor sensitive to a full region of visible color spectrum;

two lenses, each being mounted in front of one of said two image sensors;

said first image sensor producing a first image and said second image sensor producing a second image;

an analog-to-digital converting circuitry coupled to said first and said second image sensor and digitizing said first and said second intensity images to produce correspondingly a first digital image and a second digital image;

an image memory, coupled to said analog-to-digital converting circuitry, for storing said first digital image and said second digital image; and

a digital image processor, coupled to said image memory and receiving said first digital image and said second digital image, producing a resultant digital image from said first digital image enhanced with said second digital image.

Majority at 3-4. It is unprecedented for a claim drawn with to a machine of such precisely defined structure to be invalidated under Section 101. As Judge Newman correctly stated in her dissent, “[t]his camera is a mechanical and electronic device

of defined structure and mechanism; it is not an ‘abstract idea.’ ” Dissent at 2.

This claim plainly recites patent-eligible subject matter.

The patent at issue in this appeal, U.S. Patent No. 6,611,289 (“’289 Patent”), was filed on January 15, 1999, more than twenty years ago.¹ Appx14. Existing digital cameras at that time typically used a *single* image sensor to capture a scene. Appx24[1:26-30]. An image sensor is a photosensitive device that can react to light reflected from the scene and translate the strength of that reaction into a numerical equivalent. Appx24[1:30-32]. If a mosaic of filters (*e.g.*, red, green, and blue filters) is superimposed over the image sensor, the reaction of the image sensor can be measured for those different regions of the color spectrum, and those measurements can be combined and evaluated by software to determine the specific color at each location in the picture, thus creating a full color image. Appx15[Fig.1]; Appx24[1:32-36; 1:50-57].

Although less prevalent, cameras having *multiple* image sensors also existed at the time of the ’289 Patent’s filing. Appx25[4:47-61]. Instead of using just a single image sensor with a superimposed mosaic filter, these multi-sensor cameras used three separate image sensors and a prism that split the light reflected from a scene into three distinct bands (*e.g.*, red, green, and blue bands), such that each

¹ For context, the first Apple accused product, the iPhone 7 Plus, became available in September 2016 (Appx251[¶24]), and the first Samsung accused product, the Galaxy Note 8, became available in September 2017 (Appx282[¶27]).

image sensor would react to light from only one band to create a component image. Appx25[4:53-61]. The three component images, each being from one of the three image sensors, could then be combined to reproduce the original colors of the scene. Appx16[Fig.2]; Appx25[4:34-53].

Both single-sensor and multi-sensor digital cameras that were available at the time of the '289 Patent's filing suffered from problems associated with the technological limitations of then-existing image sensors. Appx24[1:40-49; 1:66-2:3; 2:8-22]. These problems included low image resolution, low dynamic range, low signal-to-noise ratio ("SNR"), inaccurate color reproduction, and low image quality. Appx24[1:40-49; 1:66-2:3; 2:8-22]. The '289 Patent solved these problems by adding an *additional image sensor* that is "sensitive to a full region of visible color spectrum" and using that additional sensor to capture information that is used to enhance the image(s) captured by the other sensor(s). Appx25-26[4:62-5:40]; Appx27[7:36-46]; Appx28[9:4-40]. The '289 patent also made the image sensors "closely positioned with respect to a common plane" so that they could capture images of the same scene without the use of the prism of prior multi-sensor cameras. Appx26[5:58-6:26]; Appx27[8:30-32].

Thus, the '289 Patent did not merely state the concept of image enhancement and add the words "apply it," nor did it merely apply image enhancement to an existing digital camera architecture. Rather, it created a completely *new* digital

camera architecture that could be used in a specific way to provide a technological solution to technological problems associated with prior digital cameras. The improved digital camera of the '289 Patent could produce higher-quality images while using both smaller image sensors (having higher yield, higher sensitivity, less cross-talking, and lower clocking rate) and smaller optical lenses compared with prior digital cameras. Appx24[2:36-65]; Appx27[7:3-7]; Appx28[10:13-16].

The '289 Patent discloses both a two-sensor embodiment and a four-sensor embodiment of its improved digital camera. The *four-sensor embodiment* operates by: (1) capturing four separate images (*e.g.*, red, green, blue, and black-and-white (“B/W”) images) of the same scene using four separate image sensors, three of which have color filters (*e.g.*, fully red, fully green, and fully blue filters), and an additional fourth sensor that does not have a color filter; (2) enhancing the red image using the B/W image; (3) enhancing the green image using the B/W image; (4) enhancing the blue image using the B/W image; and (5) combining the enhanced red, enhanced green, and enhanced blue images to create a full color image. Appx22[Fig.7]; Appx23[Fig.8]; Appx28[9:4-40; 10:7-17]. Importantly, image combination (which was performed in prior multi-sensor cameras) is not image enhancement; these are separate steps, with image enhancement being performed before image combination in the disclosed four-sensor embodiment. The image enhancement described in the patent with respect to Fig. 7 is dynamic

range expansion, and the patent also identifies noise removal and color correction as other examples of image enhancement that can be performed in accordance with the invention. Appx22[Fig.7]; Appx28[9:4-40; 10:7-16].

The *two-sensor embodiment* replaces the three image sensors having color filters of the four-sensor embodiment with a single image sensor that is used to capture a B/W image of the scene, but retains the additional sensor that does not have a color filter. Appx27[7:36-46]. The two-sensor embodiment operates by: (1) capturing two separate images (*e.g.*, first and second B/W images) of the same scene using the two separate image sensors; and (2) enhancing the first B/W image using the second B/W image. Appx27[7:40-43]. Thus, whereas the four-sensor embodiment performs *three image enhancement steps* to form component images (*e.g.*, enhanced red, enhanced green, and enhanced blue images) followed by an image combination step, the two-sensor embodiment performs *one image enhancement step* and eliminates the image combination step. But otherwise, the patent teaches that two-sensor embodiment functions the same as the four-sensor embodiment, stating that while “[t]he following description is based on the [four-sensor] embodiment illustrated in FIG. 3, those skilled in the art can appreciate that the description is equally applied to the [two-sensor] black-and-white digital cameras.” Appx27[7:43-46].

Both the two-sensor embodiment and the four-sensor embodiment disclosed in the '289 Patent are implementations of claim 1, since the claim only specifies that the *second image sensor* must be “sensitive to a full region of visible color spectrum,” but does not include any restrictions on the *first image sensor*. Thus, the *first image sensor* of claim 1 can be a B/W image sensor of the two-sensor embodiment, a color image sensor (*e.g.*, a red sensor, a green sensor, or a blue sensor) of the four-sensor embodiment, or any other type of image sensor.

Essentially, the two-sensor embodiment practices claim 1 once, whereas the four-sensor embodiment practices claim 1 three times (once for each of its three image enhancement steps). Since the advantages of the invention disclosed in the patent specification arise from the *image enhancement step*, and *not* the *image combination step*, those advantages apply equally to both the four-sensor embodiment and the two-sensor embodiment. Appx28[10:13-16].

The advances of the claimed invention over the prior art include: (1) the inclusion of an additional image sensor (*i.e.*, the “second image sensor”) that is “sensitive to a full region of visible color spectrum”; (2) the positioning of multiple image sensors (*i.e.*, the “first image sensor” and the “second image sensor”) so that they are “closely positioned with respect to a common plane”, allowing them to capture images of the same scene (without using the prism of prior multi-sensor cameras); and (3) the use of the second image sensor to capture a digital image that

is used to enhance a digital image captured by the first image sensor. Neither the claimed digital camera architecture using an additional image sensor that is “sensitive to a full region of visible color spectrum,” nor the claimed use of that digital camera architecture to produce a resultant digital image, has been shown to exist in the prior art, regardless of whether the invention is implemented in a four-sensor or a two-sensor configuration.

The majority’s decision would not only invalidate the claims at issue here, which are plainly drawn to a patent-eligible improved digital camera, but also drastically expand the exclusionary principle under Section 101 for laws of nature, natural phenomena, and abstract ideas far beyond any prior decisions of either this Court or the Supreme Court. As Judge Newman warned in her dissent, “[t]he fresh uncertainties engendered by the majority’s revision of Section 101 are contrary to the statute and the weight of precedent, and contrary to the public’s interest in a stable and effective patent incentive.”

ARGUMENT

In its decisions in *Alice Corp. Pty.*, 573 U.S. 208 and *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012), the Supreme Court set forth “a framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Alice*, 573 U.S. at 217. At *step one* of this two-step framework—

referred to herein as the *Alice/Mayo* test—the court must “determine whether the claims at issue are directed to one of those patent-ineligible concepts.” *Alice*, 573 U.S. at 217. If yes, the court must proceed to *step two*, which requires the court to “search for an ‘inventive concept’—*i.e.*, an element or combination of elements that is ‘sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.’ ” *Alice*, 573 U.S. at 217-18 (quoting *Mayo*, 566 U.S. at 72–73).

In finding claim 1 of the '289 Patent ineligible for patent protection under Section 101, the majority improperly turned the *Alice/Mayo* test for patent-eligibility on its head. They took a claim that recites a patent-eligible machine (the claimed digital camera architecture) and improperly searched for “something more” (the “enhanced with” limitation) to transform that machine into an “abstract idea.” The majority’s approach is manifestly wrong, but was particularly improper in this case since the claimed machine here has not been shown to exist in the prior art and therefore, based upon the record on appeal, could stand on its own as a patentable invention.

To reach their erroneous conclusion of patent-ineligibility, the majority committed errors at every stage of the *Alice/Mayo* test. They compounded these errors by impermissibly ignoring plausible allegations in the pleadings supporting patent-eligibility, and improperly making *new* findings of fact—at the pleadings

stage—that are not only adverse to Appellants, but also plainly incorrect in view of the evidence of record. When the *Alice/Mayo* test is applied properly in accordance with the precedent of this Court and the Supreme Court, and in view of both the pleadings and a proper understanding the full evidence of record, it is apparent that the claims at issue here are patent-eligible under Section 101.

I. THE MAJORITY FAILED TO ACCOUNT FOR THE SPECIFIC REQUIREMENTS OF CLAIM 1 WHEN ARTICULATING THE “FOCUS” OF THE CLAIM

This Court has repeatedly warned that when articulating the “focus” of claims at step one of the *Alice/Mayo* test, “courts ‘must be careful to avoid oversimplifying the claims’ by looking at them generally and failing to account for the specific requirements of the claims.” *McRO, Inc.*, 837 F.3d at 1313 (quoting *In re TLI Commc’ns LLC Pat. Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016)). Despite this warning, the majority “agree[d] with the district court that claim 1 is directed to the abstract idea of taking two pictures (which may be at different exposures) and using one picture to enhance the other in some way.” This characterization of claim 1 is completely untethered from the language of the claim, as it not only excludes all of the first five limitations in their entirety, but also rewrites the “enhanced with” language to sound as broad as possible.

Claim 1 requires that the images must be *digital* images (not *film* images). It requires that the digital images must be captured by *different* image sensors (not by

the *same* image sensor). It requires that the digital image which is used to enhance the other digital image must be captured by an image sensor that is “sensitive to a *full* region of visible color spectrum” (and not one that is sensitive to only a *portion* of the visible color spectrum, as was the case with prior multi-sensor cameras).

And it requires that the images must be captured by image sensors that are “closely positioned with respect to a common plane” (so that they capture images of the same scene in the absence of the prism of prior multi-sensor cameras).

The majority included *none* of these specific requirements from the claim language in their characterization of the “focus” of the claim. Instead, the majority improperly added the superfluous phrases “which may be at different exposures” and “in some way” to their characterization. Neither of these phrases is included—or even suggested—in the language of claim 1 itself.

Because the majority adopted a characterization of the “focus” of claim 1 that is improperly overbroad, ignoring the specific requirements of the claim, their step one inquiry was rendered meaningless. *See Thales Visionix Inc.*, 850 F.3d at 1347 (“We must therefore ensure at step one that we articulate what the claims are directed to with enough specificity to ensure the step one inquiry is meaningful.”)

II. THE MAJORITY IMPROPERLY DISCOUNTED THE CLAIMED COMBINATION OF LIMITATIONS

It has long been established that “a new combination ... may be patentable even though all the constituents of the combination were well known and in

common use before the combination was made.” *Diamond*, 450 U.S. at 188; *see also Bascom Glob. Internet Servs., Inc.*, 827 F.3d at 1350 (“an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces.”). The majority improperly disregarded this fundamental principle of patent law by relying heavily on the purported lack of novelty of the *individual* claim elements, but then improperly discounting the claimed *combination* of limitations.

The majority relied heavily on the lack of novelty of the *individual* digital camera components recited in claim 1 for purposes of their analyses under both step one and step two of the *Alice/Mayo* test. For example, in concluding that claim 1 is “directed to” an “abstract idea” under step one, the majority found that:

Given the claim language and the specification, we conclude that claim 1 is “directed to a result or effect that itself is the abstract idea and merely invoke[s] generic processes and machinery” rather than “a specific means or method that improves the relevant technology.”

Majority at 5. Also under step one, the majority found that:

Only conventional camera components are recited to effectuate the resulting “enhanced” image—two image sensors, two lenses, an analog-to-digital converting circuitry, an image memory, and a digital image processor. Indeed, it is undisputed that these components were well-known and conventional.

Majority at 6. Based in these findings, the majority concluded that “[w]hat is claimed is simply a generic environment in which to carry out the abstract idea.”

Id.

Similarly, under step two of the *Alice/Mayo* test, the majority concluded that:

Because claim 1 is recited at a high level of generality and merely invokes well-understood, routine, conventional components to apply the abstract idea identified above, ... claim 1 fails at step two

Majority at 9. Thus, the lack of novelty of the *individual* components was the linchpin of the majority’s conclusions that the claims merely provide a “generic environment” to carry out an “abstract idea” under step one, and do not include an “inventive concept” under claim two.

But when addressing the claimed *combination* of limitations that define the digital camera architecture, the majority changed their tune, dismissively stating:

But even if claim 1 recites novel subject matter, that fact is insufficient by itself to confer eligibility.

Majority at 9. Thus, the majority took that position that the lack of novelty of the *individual* digital camera components recited in the limitations can invalidate the claims under Section 101, but the novelty of the claimed *combination* of those components, which together form the digital camera architecture, cannot save them. The majority cannot have it both ways; either novelty matters, or it does not.

Moreover, the majority’s statement that “even if claim 1 recites novel subject matter, that fact is insufficient to confer eligibility” cannot be true if that novel subject matter is a combination of *structural* limitations (*i.e.*, a *machine*) and therefore patent-eligible in its own right under the express language of Section 101. As Judge Newman stated in her dissent, “[a] statement of purpose or advantage does not convert a device into an abstract idea.” Dissent at 3. The cases relied on by the majority do not suggest otherwise, as those cases simply held that the novelty of ineligible subject matter (*i.e.*, laws of nature, natural phenomena, or abstract ideas), or matter that does not appear in the claim, cannot confer patent-eligibility; those cases say nothing as to the novelty of a combination of structural limitations (*i.e.*, a machine) that actually are recited in the claim. *See SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018) (“The claims here are ineligible because their innovation is an innovation in ineligible subject matter.”); *Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329, 1339 (Fed. Cir. 2017) (“While the specification may describe a purported innovative ‘scalable architecture,’ claim 1 of the '187 patent does not.”).

To the extent that there is a difference in meaning between the terms “unconventional” and “novel,” that difference must favor patent-eligibility, since something can be unconventional and yet not novel, but the opposite cannot be true; something that is novel will always be unconventional.

III. THE MAJORITY IMPROPERLY MADE NEW AND ERRONEOUS FINDINGS OF FACT AGAINST APPELLANTS

The majority rejected Appellants’ argument that claim 1 is “directed to a patent-eligible improvement in digital camera functionality” under step one of the *Alice/Mayo* test based on a purported “mismatch between the specification ... and the breath of claim 1” Majority at 8. Specifically, the majority found that:

Each time the specification of the ’289 patent suggests that a particular configuration is the asserted advance over the prior art, it does so in a four-lens, four-image-sensor configuration in which three of the sensors are color-specific while the fourth is a black-and-white sensor.

...

Yet representative claim 1 requires only a two-lens, two-image sensor configuration in which none of the image sensors must be color.

Majority at 8. The majority used this as an additional basis for finding that claim 1 does not include an “inventive concept” under step two, concluding that “[i]n other words, ‘[t]he main problem that [Yu] cannot overcome is that the *claim*—as opposed to something purportedly described in the specification—is missing an inventive concept.” Majority at 10 (emphasis in original) (quoting *Two-Way Media*, 874 F.3d at 1338.). Moreover, the majority also used this finding as a basis for rejecting the plausible allegations in the pleadings, stating that “a court need not accept as true allegations that contradict matters properly subject to judicial

notice or by exhibit, such as the claims and the patent specification.” Majority at 11.

This *new finding against Appellants*, made at the *pleadings stage* where all factual inferences must be drawn in favor of the non-moving party, was impermissible. *See Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1261 (Fed. Cir. 2017) (“Such an assumption is improper when reviewing a dismissal under Rule 12(b)(6), where all factual inferences must be drawn in favor of the non-moving party.”); *Bascom*, 827 F.3d at 1352 (“As explained above, construed in favor of BASCOM as they must be in this procedural posture, the claims of the ’606 patent do not preempt the use of the abstract idea of filtering content on the Internet or on generic computer components performing conventional activities.”)

Aside from the prohibition against making findings against the non-moving party at the pleadings stage, the majority’s finding is factually erroneous, and demonstrates the danger of deciding matters at the pleadings stage in patent cases involving highly complex technologies. As explained above, claim 1 covers both the two-sensor embodiment and the four-sensor embodiment described in the specification, and all of the advantages described in the specification apply equally to both embodiments, since those advantages arise from the image enhancement step that is performed by both embodiments, and not by the unclaimed image combination step that is performed only by the four-sensor embodiment. At a

minimum, Appellants must be allowed to submit expert testimony on the issue before such an issue can be decided against them.

IV. THE MAJORITY FAILED TO ADDRESS THE ISSUE OF PREEMPTION

The Supreme Court has repeatedly “described the concern that drives [the] exclusionary principle [for laws of nature, natural phenomena, and abstract ideas] as one of pre-emption . . .,” *Alice*, 573 U.S. at 216, reasoning that to allow patent protection to extend so far could “ ‘... inhibit further discovery by improperly tying up the future use of’ these building blocks of human ingenuity . . .,” *id.* (quoting *Mayo*, 566 U.S. at 85). Accordingly, the Supreme Court addresses the issue of preemption as a matter of course in its Section 101 decisions. Yet the majority completely failed to address the issue of “preemption” in its decision.

In fact, claim 1 has been “narrowly circumscribed to the particular system outlined . . .,” and therefore the claimed “arrangement is not so broadly described to cause preemption concerns.” *See Amdocs (Israel) Limited*, 841 F.3d at 1301. The “narrowly circumscribed particular system” of claim 1 is the claimed combination of multiple image sensors that are of a *specific type*, arranged in a *specific configuration*, and used in a *specific manner* to produce a resultant digital image. As an example of the absence of preemption, some cameras (including some multi-sensor cameras) include modes of operation—such as a single-sensor high dynamic range (“HDR”) mode—that use one captured digital image to enhance

another, yet do not infringe claim 1 because they capture those multiple images using the same image sensor. Appx238[¶11]; Appx271[¶13].

Appellants clearly did not preempt the field of image enhancement, nor did they attempt to monopolize the use of image enhancement in a particular field of use or technological environment.

CONCLUSION AND STATEMENT OF RELIEF SOUGHT

For the above reasons, the Court should grant rehearing *en banc*, and rehear this appeal.

Respectfully Submitted,

Dated: July 12, 2021

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ADDENDUM

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

YANBIN YU, ZHONGXUAN ZHANG,
Plaintiffs-Appellants

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**SAMSUNG ELECTRONICS CO., LTD., SAMSUNG
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Defendants-Appellees

2020-1803

Appeal from the United States District Court for the Northern District of California in No. 3:18-cv-06339-JD, Judge James Donato.

Decided: June 11, 2021

ROBERT G. LITTS, Dan Johnson Law Group, LLP, Burlingame, CA, argued for plaintiffs-appellants. Also represented by DANIEL JOHNSON, JR.

HEIDI LYN KEEFE, Cooley LLP, Palo Alto, CA, argued for all defendants-appellees. Defendant-appellee Apple Inc. also represented by DEEPA KANNAPPAN, LOWELL D. MEAD, PRIYA B. VISWANATH; PHILLIP EDWARD MORTON, Washington, DC.

DOUGLAS HALLWARD-DRIEMEIER, Ropes & Gray LLP, Washington, DC, for defendants-appellees Samsung Electronics Co., Ltd., Samsung Electronics America, Inc. Also represented by JAMES RICHARD BATCHELDER, DAVID S. CHUN, East Palo Alto, CA; STEVEN PEPE, New York, NY; SCOTT S. TAYLOR, Boston, MA.

Before NEWMAN, PROST*, and TARANTO, *Circuit Judges*.

Opinion for the court filed by *Circuit Judge* PROST.

Dissenting opinion filed by *Circuit Judge* NEWMAN.

PROST, *Circuit Judge*.

Yanbin Yu and Zhongxuan Zhang (collectively, “Yu”) sued Apple and Samsung (collectively, “Defendants”),

* Circuit Judge Sharon Prost vacated the position of Chief Judge on May 21, 2021.

alleging that Defendants infringed claims 1, 2, and 4 of U.S. Patent No. 6,611,289 (“the ’289 patent”). The district court granted Defendants’ motion to dismiss on the basis that the asserted claims were invalid under 35 U.S.C. § 101. Yu appeals. Because the district court did not err, we affirm.

BACKGROUND

The ’289 patent is titled “Digital Cameras Using Multiple Sensors with Multiple Lenses.” Claim 1 is representative¹ and recites:

1. An improved digital camera comprising:

a first and a second image sensor closely positioned with respect to a common plane, said second image sensor sensitive to a full region of visible color spectrum;

two lenses, each being mounted in front of one of said two image sensors;

said first image sensor producing a first image and said second image sensor producing a second image;

an analog-to-digital converting circuitry coupled to said first and said second image sensor and digitizing said first and said second intensity images to produce correspondingly a first digital image and a second digital image;

¹ The district court treated claim 1 as representative for purposes of its eligibility analysis. Neither party disputes that treatment on appeal, and Yu does not separately argue the eligibility of dependent claims 2 or 4. We therefore treat claim 1 as representative for purposes of our eligibility analysis. See *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1352 (Fed. Cir. 2016).

an image memory, coupled to said analog-to-digital converting circuitry, for storing said first digital image and said second digital image; and

a digital image processor, coupled to said image memory and receiving said first digital image and said second digital image, producing a resultant digital image from said first digital image enhanced with said second digital image.

Defendants filed a Rule 12(b)(6) motion to dismiss, which the district court granted with prejudice after concluding that each asserted claim was patent ineligible under § 101. The district court held that the asserted claims were directed to “the abstract idea of taking two pictures and using those pictures to enhance each other in some way.” *Yu v. Apple Inc.*, Nos. 18-cv-6181, 18-cv-6339, 2020 WL 1429773, at *3 (N.D. Cal. Mar. 24, 2020) (“*District Court Opinion*”). The court explained that “photographers ha[ve] been using multiple pictures to enhance each other for over a century.” *Id.* at *4. The district court further concluded that the asserted claims lack an inventive concept, noting “the complete absence of any facts showing that the[] [claimed] elements were not well-known, routine, and conventional.” *Id.* at *6.

The district court entered judgment. Yu timely appealed. We have jurisdiction under 28 U.S.C. § 1295(a)(1).

DISCUSSION

We review a district court’s grant of a Rule 12(b)(6) motion under the law of the regional circuit. *Simio, LLC v. FlexSim Software Prods., Inc.*, 983 F.3d 1353, 1358 (Fed. Cir. 2020). Under Ninth Circuit law, we review such dismissals de novo, construing all allegations of material fact in the light most favorable to the nonmoving party. *Yagman v. Garcetti*, 852 F.3d 859, 863 (9th Cir. 2017). And we review de novo a district court’s determination of patent

ineligibility under § 101. *Visual Memory LLC v. NVIDIA Corp.*, 867 F.3d 1253, 1257 (Fed. Cir. 2017).

In analyzing whether claims are patent eligible under § 101, we employ the two-step *Mayo/Alice* framework. *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014); *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 70–73 (2012). First, we determine whether a patent claim is directed to an unpatentable law of nature, natural phenomenon, or abstract idea. *Alice*, 573 U.S. at 217. If so, we then determine whether the claim nonetheless includes an “inventive concept” sufficient to “transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. at 72, 78).

I

We begin our analysis with step one. We agree with the district court that claim 1 is directed to the abstract idea of taking two pictures (which may be at different exposures) and using one picture to enhance the other in some way. *See District Court Opinion*, 2020 WL 1429773, at *3, *6.

“We have approached the Step 1 directed to inquiry by asking what the patent asserts to be the focus of the claimed advance over the prior art. In conducting that inquiry, we must focus on the language of the [a]sserted [c]laims themselves, considered in light of the specification.” *TecSec, Inc. v. Adobe Inc.*, 978 F.3d 1278, 1292 (Fed. Cir. 2020) (cleaned up). Given the claim language and the specification, we conclude that claim 1 is “directed to a result or effect that itself is the abstract idea and merely invoke[s] generic processes and machinery” rather than “a specific means or method that improves the relevant technology.” *Smart Sys. Innovations, LLC v. Chi. Transit Authority*, 873 F.3d 1364, 1371 (Fed. Cir. 2017).

At the outset, we note that claim 1 results in “producing a resultant digital image from said first digital image

enhanced with said second digital image.” Yu does not dispute that, as the district court observed, the idea and practice of using multiple pictures to enhance each other has been known by photographers for over a century. *See District Court Opinion*, 2020 WL 1429773, at *4. Rather, Yu contends that claim 1 is directed to a patent-eligible application of this idea as opposed to just the idea itself.

The claim’s remaining limitations undercut Yu’s contention. Only conventional camera components are recited to effectuate the resulting “enhanced” image—two image sensors, two lenses, an analog-to-digital converting circuitry, an image memory, and a digital image processor. Indeed, it is undisputed that these components were well-known and conventional. *See, e.g.*, Reply Br. 12 (“It is true that the individual digital camera components recited in the claims are themselves generic and conventional.” (emphasis omitted)). And, as claimed, these conventional components perform only their basic functions (e.g., “said first image sensor producing a first image,” “said second image sensor producing a second image,” “an analog-to-digital converting circuitry [for] digitizing . . . images,” “an image memory . . . for storing said first digital image and said second digital image”) and are set forth at a high degree of generality. This is consistent with the specification’s identification of the “great need for a *generic* solution that makes digital cameras capable of producing high resolution images without [high] cost.” ’289 patent col. 2 ll. 3–6 (emphasis added). What is claimed is simply a generic environment in which to carry out the abstract idea. *See In re TLI Commc’ns LLC Pat. Litig.*, 823 F.3d 607, 611 (Fed Cir. 2016) (“[T]he recited physical components merely provide a generic environment in which to carry out the abstract idea of classifying and storing digital images in an organized manner.”).

Yu's contrary arguments are unpersuasive.² For example, Yu argues that the asserted claims “are directed to a patent-eligible improvement in digital camera functionality” by “providing a specific solution” to problems such as “low resolution caused by low pixel counts” and “inability to show vivid colors caused by limited pixel depth.” Appellant's Br. 36–38; *see also id.* at 56. But claim 1's solution to those problems is the abstract idea itself—to take one image and “enhance” it with another. *See* '289 patent col. 10 ll. 54–58 (“[A] digital image processor . . . produc[es] a resultant digital image from said first digital image enhanced with said second digital image.”).

Yu further points to portions of the specification to support the contention that the asserted advance in the claims is the particular configuration of lenses and image sensors. But “[e]ven a specification full of technical details about a physical invention may nonetheless conclude with claims that claim nothing more than the broad law or abstract idea underlying the claims.” *ChargePoint, Inc. v. Sema-Connect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019). Such is the case here.

Each time the specification of the '289 patent suggests that a particular configuration is the asserted advance over the prior art, it does so in a four-lens, four-image-sensor configuration in which three of the sensors are color-specific while the fourth is a black-and-white sensor. *See* '289 patent col. 9 ll. 23–27 (“One of the key features of the

² We note that Yu's claimed invention is couched as an improved machine (an “improved digital camera”). But whether a device is “a tangible system (in § 101 terms, a ‘machine’)” is not dispositive. *See Alice*, 573 U.S. at 224; *In re TLI Commc'ns*, 823 F.3d at 611 (“[N]ot every claim that recites concrete, tangible components escapes the reach of the abstract-idea inquiry.”). As discussed herein, the focus of claim 1 is the abstract idea.

present multiple sensors is to use the intensity image from B/W sensor 308 to expand the dynamic ranges of images from sensors 302, 304 and 306 so as to increase overall dynamic range of the resultant color images.”); *see also id.* at col. 10 ll. 17–25 (“What sets the present invention fundamentally apart from existing technologies is the use of the black-and-white intensity image from the image sensor with a full transparent filter or no filter at all. The B/W image sensor can capture full information including details that may be missed by those color image sensors.”). Indeed, the portion of the specification describing the “many obvious benefits and advantages” of the “unique configuration” hinges on that particular four-lens, four-image-sensor configuration in which three of the sensors are color-specific while the fourth is a black-and-white sensor. *Id.* at col. 2 ll. 52–57 (“Second each of the image sensors is only responsible for one color; thereby the expensive process of coating a mosaic of selectively transmissive filters superimposed in pixel-based registration on one image sensor is eliminated and subsequently no micro-lenses process is needed.”). Yet representative claim 1 requires only a two-lens, two-image-sensor configuration in which none of the image sensors must be color.³ In these circumstances, the mismatch between the specification statements that Yu points to and the breadth of claim 1 underscores that the focus of the claimed advance is the abstract idea and not the particular configuration discussed in the specification that allegedly departs from the prior art.

³ In the ’289 patent, a sensor “sensitive to a full region of visible color spectrum” is a black-and-white sensor. ’289 patent claim 1; *see id.* at col. 2 ll. 39–49, col. 5 ll. 28–39, col. 10 ll. 17–23; Oral Arg. at 2:54–3:20, 19:05–46, No. 20-1760, http://oralarguments.cafc.uscourts.gov/default.aspx?fl=20-1760_03032021.mp3.

Accordingly, at step one, we agree with the district court that claim 1 of the '289 patent is directed to an abstract idea.

II

Turning to step two, we conclude that claim 1 does not include an inventive concept sufficient to transform the claimed abstract idea into a patent-eligible invention. Because claim 1 is recited at a high level of generality and merely invokes well-understood, routine, conventional components to apply the abstract idea identified above, *see, e.g.*, '289 patent claim 1; *id.* at col. 2 ll. 3–5; J.A. 117–20, claim 1 fails at step two, *see, e.g., Alice*, 573 U.S. at 225–26; *Mayo*, 566 U.S. at 73; *see also, e.g., In re TLI Commc'ns*, 823 F.3d at 615 (concluding patent claims ineligible at step two in part because “the recited physical components behave exactly as expected according to their ordinary use”).

Yu's contrary arguments again fail. For example, Yu argues that “[t]he unconventional nature of the digital camera architecture is demonstrated by the prosecution history of the '289 Patent” because the asserted claims “were allowed . . . over multiple prior art references.” Appellant's Br. 56. But even if claim 1 recites novel subject matter, that fact is insufficient by itself to confer eligibility. *See SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018); *Two-Way Media Ltd. v. Comcast Cable Commc'ns, LLC*, 874 F.3d 1329, 1340 (Fed. Cir. 2017) (“Eligibility and novelty are separate inquiries.”).

Yu further argues that the claimed “hardware configuration is vital to performing the claimed image enhancement” and that, “[t]herefore, the claimed combination of limitations . . . is unconventional.” Appellant's Br. 59. But the conclusion does not follow from the premise. Conventional computer equipment can be “vital” to an advance that is still abstract, but not suffice to avoid ineligibility at *Alice* step two. *See, e.g., SAP*, 898 F.3d at 1168–70 (ineligibility holding where abstract, mathematical data

manipulation had to be implemented on computers, but only conventional computer equipment was required). Here, the *claimed* hardware configuration itself is not an advance and does not itself produce the asserted advance of enhancement of one image by another, which, as explained, is an abstract idea. The claimed configuration does not add sufficient substance to the underlying abstract idea of enhancement—the generic hardware limitations of claim 1 merely serve as “a conduit for the abstract idea.” *In re TLI Commc’ns*, 823 F.3d at 612. In other words, “[t]he main problem that [Yu] cannot overcome is that the *claim*—as opposed to something purportedly described in the specification—is missing an inventive concept.” *Two-Way Media*, 874 F.3d at 1338.

In sum, we see no inventive concept in claim 1 that would confer patent eligibility at step two.

III

Yu also argues that the district court erred at the pleadings stage in making certain adverse findings of fact and failing to accept certain allegations in the complaint. According to Yu, the district court (1) should not have considered the undisputed fact that the practice of using multiple pictures to enhance each other was well-known for over a century; (2) should not have ruled on the “highly complex” technology at issue without first hearing expert testimony; and (3) improperly disregarded Yu’s allegations of patent eligibility.

Yu’s arguments are misplaced. First, the district court’s recognition at the pleadings stage in the context of § 101 of the century-old practice of using multiple pictures to enhance each other concerns a pertinent “fundamental . . . concept[] and technological development[] [and thus] is well supported by our precedents.” *Affinity Labs of Tex., LLC v. Amazon.com Inc.*, 838 F.3d 1266, 1270 (Fed. Cir. 2016). Second, patent eligibility can be determined at the Rule 12(b)(6) stage without the aid of expert

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testimony. *See, e.g., Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1373–74 (Fed. Cir. 2016). It was not error for the district court to do so here. Last, “[i]n ruling on a 12(b)(6) motion, a court need not accept as true allegations that contradict matters properly subject to judicial notice or by exhibit, such as the claims and the patent specification.” *Secured Mail Sols. LLC v. Universal Wilde, Inc.*, 873 F.3d 905, 913 (Fed. Cir. 2017) (cleaned up). Here, the district court considered the intrinsic record and concluded that the claims were directed to patent-ineligible subject matter, despite Yu’s allegations to the contrary. This is not error.

CONCLUSION

We have considered Yu’s remaining arguments and find them unpersuasive. In view of the foregoing, the judgment of the United States District Court for the Northern District of California is affirmed.

AFFIRMED

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

YANBIN YU, ZHONGXUAN ZHANG,
Plaintiffs-Appellants

v.

APPLE INC.,
Defendant-Appellee

2020-1760

Appeal from the United States District Court for the
Northern District of California in No. 3:18-cv-06181-JD,
Judge James Donato.

YANBIN YU, ZHONGXUAN ZHANG,
Plaintiffs-Appellants

v.

**SAMSUNG ELECTRONICS CO., LTD., SAMSUNG
ELECTRONICS AMERICA, INC.,**
Defendants-Appellees

2020-1803

Appeal from the United States District Court for the Northern District of California in No. 3:18-cv-06339-JD, Judge James Donato.

NEWMAN, *Circuit Judge*, dissenting.

The invention described and claimed in U.S. Patent No. 6,611,289 (“the ’289 patent”) is a digital camera having two lenses mounted in front of separate image sensors, with analog to digital conversion circuitry, a memory that stores the images, and a digital processor that enhances the images. This camera is a mechanical and electronic device of defined structure and mechanism; it is not an “abstract idea.” Observation of the claims makes clear that they are for a specific digital camera:

1. An improved digital camera comprising:

a first and second image sensor closely positioned with respect to a common plane, said second image sensor sensitive to a full region of visible color spectrum;

two lenses, each being mounted in front of one of said two image sensors;

said first image sensor producing a first image and said second image sensor producing a second image;

an analog-to-digital converting circuitry coupled to said first and said second image sensor and digitizing said first and said second intensity images to produce correspondingly a first digital image and a second digital image;

an image memory, coupled to said analog-to-digital converting circuitry, for storing said first digital image and said second digital image; and

a digital image processor, coupled to said image memory and receiving said first digital image and said second digital image, producing a resultant digital image from said first digital image enhanced with said second digital image.

2. The improved digital camera as recited in claim 1, wherein said first image sensor sensitive to said full region of visible color spectrum.

4. The improved digital camera as recited in claim 1, wherein said analog-to-digital converting circuitry comprises two individual analog-to-digital converters, each integrated with one of said first and second image sensors so that said first and second digital images are digitized independently and in parallel to increase signal throughput rate.

The '289 patent specification states that the digital camera described therein achieves superior image definition. A statement of purpose or advantage does not convert a device into an abstract idea. From the court's further enlargement of Section 101 to deny access to patenting, and further obfuscation of the statute, I respectfully dissent.

DISCUSSION

The majority states that this digital camera is ineligible for consideration for patenting because "claim 1 is directed to the abstract idea of taking two pictures (which may be at different exposures) and using one picture to enhance the other in some way." Maj. Op. at 5. I repeat: claim 1 is for a digital camera having a designated structure and mechanism that perform specified functions; claim 1 is not for the general idea of enhancing camera images. The camera of the '289 patent may or may not ultimately satisfy all the substantive requirements of patentability, for this is an active field of technology. However, that does not convert a mechanical/electronic device into an abstract idea.

Section 101 states the general classes of patentable subject matter

The purpose of Section 101 is to define the subject matter of patents as distinguished from the subject matter of copyright—for both arise from the same clause of the Constitution. Section 101’s words first appeared in the Patent Act of 1793, where the Act defined the subject matter of patents as “any new and useful art, machine, manufacture or composition of matter, or any new and useful improvement on any art, machine, manufacture or composition of matter.” Patent Act of 1793, ch. 11, § 1; 1 Stat. 318 (1793). Thomas Jefferson’s words remain in today’s statute; *see* 35 U.S.C. § 101 (defining patentable subject matter as “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof.”).

The issues here debated have long been settled. The Court in *Diamond v. Diehr*, 450 U.S. 175 (1981), discussed the codification of Section 101 in Title 35, and summarized:

The Senate Report stated: “Section 101 sets forth the subject matter that can be patented, ‘subject to the conditions and requirements of this title.’ The conditions under which a patent may be obtained follow, and *Section 102 covers the conditions relating to novelty.*”

Id. at 190 (emphasis in *Diehr*) (quoting S. Rep. No. 82-1979, at 5 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2399). In contravention of this explicit distinction between Section 101 and Section 102, the majority now holds that the ’289 camera is an abstract idea because the camera’s components were well-known and conventional and perform only their basic functions. That is not the realm of Section 101 eligibility. The Supreme Court disposed of this position in *Diehr*:

It has been urged that novelty is an appropriate consideration under § 101. Presumably, this argument results from the language in § 101 referring to any “new and useful” process, machine, etc. Section 101, however, is a general statement of the type of subject matter that is eligible for patent protection “subject to the conditions and requirements of this title.” Specific conditions for patentability follow and § 102 covers in detail the conditions relating to novelty. The question therefore of whether a particular invention is novel is “wholly apart from whether the invention falls into a category of statutory subject matter.”

Diehr, 450 U.S. at 189–90 (quoting *In re Bergy*, 596 F.2d 952, 961 (C.C.P.A. 1979), vacated as moot, *Diamond v. Chakrabarty*, 444 U.S. 1028 (1980)). I stress this history, for the principle that the majority today invokes was long ago discarded. A device that uses known components does not thereby become an abstract idea, and is not on that ground ineligible for access to patenting.

The “abstract idea” concept with respect to patent-eligibility is founded in the distinction between general principle and specific application. An oft-cited illustration is *O’Reilly v. Morse*, 56 U.S. 62 (1853), where the Court rejected Samuel Morse’s claim 8 to the scientific principle he called “galvanic current,” or electromagnetism, as used for printing at a distance. The Court explained:

The eighth [claim] is too broad and covers too much ground. It is this. ‘I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims; the essence of my invention being the use of the motive power of the electric or galvanic current, which I call electro-magnetism, however developed, for making or printing intelligible characters, signs or letters at any distances, being a new

application of that power, of which I claim to be the first inventor or discoverer.’

Id. However, the Court sustained Morse’s claims to the structure and details of the invention that he named the telegraph.

Over the ensuing decades, this reasoning has solidified the foundations of eligibility, drawing on the fundamental distinction between breadth of general scientific principle, and its embodiment in practical application. This distinction between a general concept and its specific application is implemented in the Patent Act. Determination of patentability of a new device is not a matter of eligibility under Section 101, but of compliance with all the statutory provisions.

Patent-eligible subject matter must meet the substantive standards of patentability in order to receive a patent, but Section 101 ineligibility does not arise simply because a device embodies minor and predictable differences from the prior art, as the majority holds. Maj. Op. at 5–6. “The question . . . of whether a particular invention is novel is wholly apart from whether the invention falls into a category of statutory subject matter.” *Diehr*, 450 U.S. at 190 (internal quotation marks and citation omitted).

As technology advanced, the Supreme Court was cognizant of the importance of technology to the nation’s economy and well-being, and resolved significant new issues. For example, as the field of biotechnology evolved, the Court reiterated that Section 101 embraces any new or useful “manufacture” or “composition of matter,” and reminded us that “Congress intended statutory subject matter to ‘include anything under the sun that is made by man.’” *Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting S. Rep. No. 82-1979, at 5 (1952), *reprinted in* 1952 U.S.C.C.A.N. 2399; and H.R. Rep. No. 82-1923, at 6 (1952)).

And as litigation burgeoned in computer-implemented technologies, in *Alice Corp. Pty. Ltd. v. CLS Bank International*, 573 U.S. 208 (2014), the Court sought to provide guidance by proposing a two-step analytical process to distinguish abstract idea from specific embodiment. The *Alice* two-step analysis does not produce the majority's now-effected enlargement of Section 101.

In the current state of Section 101 jurisprudence, inconsistency and unpredictability of adjudication have destabilized technologic development in important fields of commerce. Although today's Section 101 uncertainties have arisen primarily in the biological and computer-implemented technologies, all fields are affected. The case before us enlarges this instability in all fields, for the court holds that the question of whether the components of a new device are well-known and conventional affects Section 101 eligibility, without reaching the patentability criteria of novelty and nonobviousness.

The digital camera described and claimed in the '289 patent is a mechanical/electronic device that easily fits the standard subject matter eligibility criteria. Neither the panel majority nor the district court decided patentability under Section 102 or Section 103, having eliminated the claims under Section 101. The '289 claims warrant review under the substantive criteria of patentability—a review that they have never received.

The fresh uncertainties engendered by the majority's revision of Section 101 are contrary to the statute and the weight of precedent, and contrary to the public's interest in a stable and effective patent incentive.

I respectfully dissent.

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