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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PASCAL GAUTRON, DIETGER VAN ANTWERPEN,
CARSTEN WAECHTER, and MATTHIAS RAAB

Appeal 2018-004650
Application 14/875,813
Technology Center 2600

Before JUSTIN BUSCH, BETH Z. SHAW, and
STEVEN M. AMUNDSON, *Administrative Patent Judges*.

SHAW, *Administrative Patent Judge*.

DECISION ON APPEAL¹

Appellants seek our review under 35 U.S.C. § 134(a) of the Examiner’s final rejection of claims 1–20, which represent all the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

Appellants’ invention is directed to calculating an adjusted shading normal vector. *See* Spec. ¶¶ 4–6, Claims App’x.

¹ Throughout this Decision we have considered the Appeal Brief filed January 25, 2018 (“App. Br.”), the Reply Brief filed March 23, 2018 (“Reply Br.”), the Examiner’s Answer mailed February 14, 2018 (“Ans.”), and the Final Rejection mailed October 10, 2017 (“Final Act.”).

Claim 1 is illustrative of the claims at issue and is reproduced below:

1. A method of adjusting a shading normal vector for a computer graphics rendering program, comprising:
 - calculating a normalized shading normal vector pointing outwards from an origin point on a tessellated surface modeling a target surface to be rendered;
 - calculating a normalized outgoing reflection vector projecting from the origin point for an incoming view vector directed towards the origin point and reflecting relative to the normalized shading normal vector;
 - calculating a correction vector such that when the correction vector is added to the normalized outgoing reflection vector a resulting vector sum is yielded that is equal to a maximum reflection vector, wherein the maximum reflection vector is on or above the tessellated surface;
 - calculating a normalized maximum reflection vector by normalizing a vector sum of the correction vector plus the maximum reflection vector; and
 - calculating a normalized adjusted shading normal vector by normalizing a vector difference of the normalized maximum reflection vector minus the incoming view vector.

REJECTION

The Examiner rejected claims 1–20 under 35 U.S.C. § 101 as directed to patent-ineligible subject matter. Final Act. 2–7.

CONTENTIONS AND ANALYSIS

We review the appealed rejections for error based upon the issues identified by Appellants, and in light of the arguments and evidence produced. For at least the reasons discussed below, we agree with and adopt the Examiner’s findings and conclusions in the Final Action and Answer.

The Examiner determines the pending claims are directed to an abstract idea of mathematical relationships, identified as a series of calculations for calculating various vectors and mathematically manipulating the vectors through mathematical formulas to obtain a normalized adjusted normal vector for a tessellated surface. Final Act 6; Ans. 2, 3. The

Examiner also determines additional elements recited in these claims do not amount to significantly more than the abstract idea itself. Final Act. 6, 7; Ans. 4, 5. According to the Examiner, the claims require no more than implementing the abstract idea on a generic computer rendering environment. Final Act. 4; Ans. 5.

Appellants present several arguments against the 35 U.S.C. § 101 rejection. App. Br. 2–11; Reply Br. 2–5. Appellants contend the claims are not directed to an abstract idea and that the claims amount to significantly more than an abstract idea. *Id.*

Appellants’ arguments are unpersuasive. Instead, we find the Examiner has provided a comprehensive response to Appellants’ arguments supported by a preponderance of evidence. Ans. 2–5; *see also* Final Act. 2–7. As such, we agree with and adopt the Examiner’s findings and explanations provided therein. *Id.*

The Supreme Court has long held that “[l]aws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, 569 U.S. 576, 598–99 (2013)). The “‘abstract ideas’ category embodies ‘the longstanding rule that ‘[a]n idea of itself, is not patentable.’” *Alice*, 134 S. Ct. at 2354–55 (quoting *Gottschalk v. Benson*, 409 U.S. 63, 67 (1972)).

In *Alice*, the Supreme Court set forth an analytical “framework for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts.” *Id.* at 2355 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–78 (2012)). The first step in the analysis is to

“determine whether the claims at issue are directed to one of those patent-ineligible concepts,” such as an abstract idea. *Id.*

If the claims are directed to a patent-ineligible concept, the second step in the analysis is to consider the elements of the claims “individually and ‘as an ordered combination’” to determine whether there are additional elements that “‘transform the nature of the claim’ into a patent-eligible application.” *Id.* (quoting *Mayo*, 566 U.S. at 77–80). In other words, the second step is 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.’” *Id.* (alteration in original) (quoting *Mayo*, 566 U.S. at 72–73). The prohibition against patenting an abstract idea “cannot be circumvented by attempting to limit the use of the formula to a particular technological environment’ or adding ‘insignificant postsolution activity.’” *Bilski v. Kappos*, 561 U.S. 593, 610–11 (2010) (citation omitted).

Appellants argue the claims as a group. *See* App. Br. 7–11. After undertaking the first step of the *Alice* inquiry, we agree with the Examiner that Appellants’ claims are directed to an abstract idea, as explained by the Examiner. Final Act. 6. All the steps recited in Appellants’ claims (*i.e.*, “calculating a normalized shading vector, . . . calculating a normalized outgoing reflection vector, . . . calculating a correction vector, . . . calculating a normalized maximum reflection vector . . . and calculating a normalized adjusted shading normal vector”), are abstract processes of calculating various vectors. *C.f. Digitech Image Techs., LLC v. Elecs. for Imaging, Inc.*, 758 F.3d 1344, 1350 (Fed. Cir. 2014) (finding an abstract idea because claims describe a process of organizing information through

mathematical correlations and are not tied to a specific structure or machine).

Appellants contend that the Examiner erred in rejecting the claims under 35 U.S.C. § 101 because the claims do not merely recite abstract mathematical relationships and formulas “but rather [are directed] to a much more concrete idea of minimizing artifacts in computer rendered images by carrying out the sequence of calculations recited in these claims.” App. Br. 7, 8.

We disagree. Instead, we agree with the Examiner’s determination that calculating a series of vectors is a mathematical relationship. Contrary to Appellants’ position, we conclude that the claim solves a mathematical problem. We agree with the Examiner that Appellants have not pointed to any language within the claim that describes an application for minimizing visual artifacts in computer rendered images or any technological improvement. Ans. 3, 4.

The second step of the *Alice* inquiry indicates that the limitations in Appellants’ claims do not add anything “significantly more” to transform them into a patent-eligible application of the abstract concept of calculating a series of vectors. Final Act. 6; Ans. 4, 5; *see also Alice*, 134 S. Ct. at 2357. We agree with the Examiner that the computer limitations of claim 1 do not add anything “significantly more” than the abstract idea. Ans. 4. As recognized by the Supreme Court, “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” *Alice*, 134 S. Ct. at 2358; *see id.* at 2359 (concluding claims “simply instruct[ing] the practitioner to implement the abstract idea of intermediated settlement on a generic computer” are not patent eligible).

In the Reply Brief, Appellants cite *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121 (Fed. Cir. 2018), as supporting Appellants’ alleged “innovation of the computer graphics rendering program,” which Appellants argue “is made clear by the computer rendering program’s calculation of a normalized adjusted shading normal vector.” Reply Br. 2. Appellants do not persuasively explain why *Aatrix* is similar to the present case. In *Aatrix*, the Federal Circuit vacated the district court’s dismissal under Rule 12(b)(6) and reversed the district court’s denial of *Aatrix*’s motion for leave to file a second amended complaint. *Aatrix*, 882 F.3d at 1130. *Aatrix* was vacated and reversed based on allegations as to facts and the proper construction of the claims—matters that are not at issue here. *Id.* Moreover, the rejected claims are unlike the claims of *Aatrix* because the rejected claims merely recite a series of calculations, whereas the claims in *Aatrix* recited various other limitations such as a form file, a data file, and a form view program operating on the form file and data file. As the Examiner concludes, and we agree, the rejected claims fail to impose any meaningful limits on the mathematical calculations and fail to describe any particular technological application for the mathematical calculations. Ans. 5.

With regard to Appellants’ argument that the pending claims are patent eligible because there are no pending obviousness or novelty rejections of the claims (*see* App. Br. 9), Appellants improperly conflate the requirements for eligible subject matter (§ 101) with the independent requirements of novelty (§ 102) and non-obviousness (§ 103). “The ‘novelty’ of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls

within the § 101 categories of possibly patentable subject matter.” *Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981); *see also Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (stating that, “under the *Mayo/Alice* framework, a claim directed to a newly discovered law of nature (or natural phenomenon or abstract idea) cannot rely on the novelty of that discovery for the inventive concept necessary for patent eligibility.”).

We have also carefully considered Appellants’ arguments regarding preemption. *See* App. Br. 10, 11. However, although “preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015). Where claims are deemed to recite only patent-ineligible subject matter under the two-step *Alice* analysis, as they are here, “preemption concerns are fully addressed and made moot.” *Id.*

Because Appellants’ claims are directed to a patent-ineligible abstract concept and do not recite something “significantly more” under the second prong of the *Alice* analysis, we sustain the Examiner’s rejection of these claims under 35 U.S.C. § 101 as being directed to non-statutory subject matter in light of *Alice* and its progeny.

DECISION

The decision of the Examiner to reject claims 1–20 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED