NOTE: This disposition is nonprecedential.

# United States Court of Appeals for the Federal Circuit

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**IN RE: ROMAN GITLIN,**
*Appellant*

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2018-1461

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Appeal from the United States Patent and Trademark Office, Patent Trial and Appeal Board in No. 12/766,889.

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Decided: June 13, 2019

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ROMAN GITLIN, Tel Aviv, Israel, pro se.

THOMAS W. KRAUSE, Office of the Solicitor, United States Patent and Trademark Office, Alexandria, VA, for appellee Andrei Iancu. Also represented by BENJAMIN T. HICKMAN, JOSEPH MATAL, AMY J. NELSON, MAI-TRANG DUC DANG.

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Before REYNA, CHEN, and HUGHES, *Circuit Judges.*

PER CURIAM.

Roman Gitlin seeks review of a Patent Trial and Appeal Board (Board) decision affirming an examiner's rejection of all pending claims of his Patent Application No. 12/766,889 ('889 Application) under 35 U.S.C. §§ 101 and

103(a) and a subset of pending claims under 35 U.S.C. § 112, second paragraph (pre-AIA).[1]  Because we agree with the Board's decision, we *affirm*.

BACKGROUND

In April 2010, Mr. Gitlin filed a patent application with the U.S. Patent and Trademark Office on a method for efficiently implementing a multi-dimensional interpolation. SAppx1170.[2]  The Government describes interpolation as "allow[ing] someone to estimate an unknown value between two values in a sequence," as opposed to extrapolation, which allows someone to estimate values beyond the sequence.  Appellee's Br. at 2.  According to the specification, the invention utilizes "a structural link between multi-dimensional interpolation local and global properties." SAppx33 ¶ 5.  The specification further provides that "computer-implementing multi-dimensional interpolation in a way which is predicated on this structural link results in multi-interpolation speedups that, rather than measuring in percentage points, measure in orders of magnitude." SAppx34 ¶ 7.

The examiner rejected all pending claims under § 101 as being directed to an abstract idea—*i.e.*, a mathematical concept, without an inventive concept. SAppx975.  The examiner determined that any computer implementation amounted to no more than mere instructions to implement the abstract idea on a computer.  *Id.*

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[1]    Because Mr. Gitlin filed the '889 Application on April 25, 2010, which was before the AIA went into effect, the pre-AIA version of § 112, second paragraph applies to his application.

[2]    The Government filed the only appendix in this appeal, labeled "Supplemental Appendix."  Because it was not jointly filed with Mr. Gitlin, we refer to citations within it with the given prefix "SAppx" and not J.A.

The examiner also rejected all pending claims under § 103 as being unpatentable for obviousness over U.S. Patent Application No. 2007/0061390 (Bredehoft) in view of U.S. Patent Application No. 2009/0279151 (Ito). SAppx977. In addition, the examiner rejected a subset of the pending claims (claims 4–7, 25, 54, 67, and 116–20) under § 112, second paragraph, for indefiniteness. SAppx971.

Mr. Gitlin appealed the examiner's rejections to the Board, and in February 2017, the Board affirmed. SAppx1–16. Mr. Gitlin appeals the Board' decision.[3] We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A).

DISCUSSION

A. Section 101 Analysis

Patent eligibility under 35 U.S.C. § 101 is a question of law that may contain underlying issues of fact. *Interval Licensing LLC v. AOL, Inc.*, 896 F.3d 1335, 1342 (Fed. Cir. 2018) (citing *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365 (Fed. Cir. 2018)). We review an ultimate conclusion on patent eligibility *de novo*. *See id.*

The Board followed the two-step framework provided in *Alice Corp. Pty. Ltd. v. CLS Bank International*, 573 U.S. 208 (2014) in its § 101 analysis and determined that (1) the claims are directed to the abstract idea of a mathematical formula or relationship and (2) the claim elements do not

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[3]     Although we provided Mr. Gitlin with repeated extensions for time to file his memorandum in lieu of oral argument and explained that no further extensions would be granted, Mr. Gitlin filed another request for extension on the provided deadline of June 7, 2019 without any reasonable explanation for why he needs more than the seven weeks he has already been given to file his memorandum. Accordingly, we consider Mr. Gitlin's argument as provided in his informal opening brief.

transform the abstract idea into a patent-eligible application.  SAppx7–8.

Claim 4 is representative:

A method for efficiently implementing a multi-dimensional interpolation in any number of dimensions, the method comprising implementing processing said interpolation's third interpolation-input as a recursion.

SAppx1170.  The Government cites an encyclopedia to show that interpolation is a mathematical concept.  Appellee's Br. at 2 (citing Richard Sheposh, "Interpolation (Mathematics)," *Salem Press Encyclopedia of Science* (2019)).  Mr. Gitlin does not provide any evidence to the contrary.  *See generally* Appellant's Informal Br.

The Supreme Court has established that a mathematical concept without more does not constitute patent-eligible subject matter.  *See Parker v. Flook*, 437 U.S. 584, 587–96 (1978) ("Here it is absolutely clear that respondent's application contains no claim of patentable invention. . . . Respondent's application simply provides a new and presumably better method for calculating alarm limit values."); *Mackay Radio & Tel. Co. v. Radio Corp. of Am.*, 306 U.S. 86, 94 (1939) ("[A] scientific truth, or the mathematical expression of it, is not patentable invention . . . ."); *cf. Diamond v. Diehr*, 450 U.S. 175, 187 (1981) ("It is now commonplace that an *application* of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." (emphasis in original)).  We have previously categorized mathematical algorithms as falling into the abstract-idea category that is ineligible for patent protection under § 101.  *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) ("In a similar vein, we have treated analyzing information by steps people go through in their minds, or by mathematical algorithms, without more, as essentially mental processes within the abstract-idea category."); *see also SAP Am., Inc.*

*v. Investpic, LLC*, 898 F.3d 1161, 1163 (Fed. Cir. 2018). In the present case, we agree with the Board that representative claim 4 is directed to a mathematical concept.

We also agree with the Board that the claim elements in this case, taken individually and as an ordered combination, do not provide an "inventive concept" that transforms the abstract idea into a patent-eligible application. *See Alice*, 573 U.S. at 221. Some of the claims of the '889 Application specify that the interpolation is processed as a recursion or tail recursion. *See* '889 Application at claims 4, 34, 55, 98, 128. Some claims specify that the interpolation occurs on a grid. *See id.* at claims 125–29, 132. Other claims specify that the interpolation occurs in "a way" that decreases the amount of processing necessary to perform the interpolation or in a way that is predicated on certain input, but the claims never explain what that "way" is. *See id.* at claims 5, 25–26, 30, 75–78, 80, 103, 116–19, 121, 125, 129–31, 133, 137, 143, 147. But merely calling for a mathematical concept to be performed more efficiently or with a particular input does not amount to an application of the mathematical concept that is patent-eligible. *See Diehr*, 450 U.S. at 182 n.7, 187.

Nor would the claims be eligible if the interpolation was merely implemented on a computer, as the specification indicates, without improving the functioning of the computer or system. *See* SAppx34 ¶ 7; *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 84 (2012) ("[S]imply implementing a mathematical principle on a physical machine, namely a computer, was not a patentable application of that principle.").

Because the claims at issue are not directed to patent-eligible subject matter, we affirm the Board's decision sustaining the examiner's rejection of the claims under § 101. Because we affirm the Board's rejection of the appealed claims under § 101, we need not review the Board's alternative § 103 rejection or its § 112, second paragraph

rejection of a subset of the claims.  We have considered Mr. Gitlin's remaining arguments and find them unpersuasive.

**AFFIRMED**

Costs

No costs.