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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/956,707	08/01/2013	Udesh Jha	4672-13001AUS	1010

12684 7590 09/04/2018

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ART UNIT	PAPER NUMBER
3694	

NOTIFICATION DATE	DELIVERY MODE
09/04/2018	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte UDESH JHA, JALPAN SHAH, DMITRIY GLINBERG, EDMUND LI, and FELIKS LANDA

Appeal 2017-002572
Application 13/956,707
Technology Center 3600

Before JOHN A. EVANS, SCOTT B. HOWARD, and JASON M. REPKO, *Administrative Patent Judges*.

EVANS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants[1] seek our review under 35 U.S.C. § 134(a) of the Examiner's final rejection of Claims 1–25. Appeal Br. 2. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.[2]

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[1] Appellants identify Chicago Mercantile Exchange Inc., as the real party in interest. Appeal Br. 2.

[2] Rather than reiterate the arguments of Appellants and the Examiner, we refer to the Appeal Brief (filed July 18, 2016, "Appeal Br."), the Reply Brief (filed November 23, 2016, "Reply Br."), the Examiner's Answer (mailed September 23, 2016, "Ans."), the Final Action (mailed November 19, 2015,

STATEMENT OF THE CASE

The Invention

The claims relate to a method of determining a margin requirement for a financial product portfolio. *See* Abstract.

Claims 1, 13, and 25 are independent. Claim 1 is illustrative and is reproduced below with some formatting added:

> 1. A computer implemented method for determining a margin requirement for a financial product portfolio, wherein market conditions for the financial product portfolio are characterized by a zero curve, the computer implemented method comprising:
>
> producing, with a processor, a plurality of scenario curves, each scenario curve reflecting a principal component analysis (PCA) model of the zero curve with a respective PCA factor of a plurality of PCA factors of the PCA model offset from a corresponding base value for the zero curve;
>
> calculating a respective projected value of the financial product portfolio for each scenario curve of the plurality of scenario curves;
>
> calculating a loss risk amount for each PCA factor based on the respective projected value and a current value of the financial product portfolio; and
>
> determining the margin requirement based on a sum of the loss risk amounts for the plurality of PCA factors.

Rejection

Claims 1–25 stand rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter. Final Act. 2–7.

"Final Act."), and the Specification (filed August 1, 2013, "Spec.") for their respective details.

ANALYSIS

We have reviewed the rejection of Claims 1–25 in light of Appellants' arguments that the Examiner erred. We consider Appellants' arguments *seriatim*, as they are presented in the Appeal Brief, pages 4–9.

CLAIMS 1–25: PATENT INELIGIBLE SUBJECT MATTER

The Examiner finds that various of the limitations recited in independent claims 1 and 25 are similar in concept to a mathematical formula. *See* Final Ans. 3–5. The Examiner's Answer finds the claims simply recite:

> input/producing information, a mathematical relationship or formula to calculate a respective projected value of the financial product portfolio, a loss risk amount, and a mathematical relationship or formula to determine the margin requirement based on a sum of the loss risk amounts for the plurality of PCA factors.

Ans. 6. In view thereof, the Examiner finds that similarly-directed claims relate to mathematical concepts, and thus, are directed to abstract ideas. *Id.*

Appellants contend the Examiner's Answer fails to address two positions taken by the appellants, specifically that the present claims are not directed either to a method of organizing information, or represent a fundamental economic practice. Reply Br. 1–2 (citing Appeal Br. 4–5). Appellants argue the Final Action referenced each of these types of abstract ideas as the bases for the rejection. *Id.* at 5 (citing Final Act. 3–4). Appellants argue thus, the Examiner's Answer finds a mathematical relationship or formula as the sole basis for rejecting the claims as being directed to an abstract idea. *Id.*

35 U.S.C. § 101

Section 101 provides that a patent may be obtained for "any new and

useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." 35 U.S.C. § 101. The Supreme Court has long recognized, however, that § 101 implicitly excludes "laws of nature, natural phenomena, and abstract ideas" from the realm of patent-eligible subject matter, as monopolization of these "basic tools of scientific and technological work" would stifle the very innovation that the patent system aims to promote. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2354 (2014) (quoting *Ass'n for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2116 (2013)); *see also Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1294–97 (2012); *Diamond v. Diehr*, 450 U.S. 175, 185 (1981).

Instead of using a definition of an abstract idea, "the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen—what prior cases were about, and which way they were decided." *Amdocs (Isr.) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (citing *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353–54 (Fed. Cir. 2016)); *accord* July 2015 Update: Subject Matter Eligibility[3] (instructing Examiners that "a claimed concept is not identified as an abstract idea unless it is similar to at least one concept that the courts have identified as an abstract idea."). As part of this inquiry, we must "look at the 'focus of the claimed advance over the prior art' to determine if the claim's 'character as a whole' is directed to excluded subject matter." *Affinity Labs of Tex., LLC v. DirecTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016).

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[3] *See* MPEP 2106.04(a), https://www.uspto.gov/patent/laws-and-regulations/examination-policy/subject-matter-eligibility.

Alice Step 1

The Supreme Court has instructed us to use a two-step framework to "distinguish[] patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of those concepts." *Alice*, 134 S. Ct. at 2355. At the first step, we determine whether the claims at issue are "directed to" a patent-ineligible concept. *Id.* Under the first step, the Examiner finds the phrase "mathematical relationships/formulas" is used to describe mathematical concepts such as mathematical algorithms, mathematical relationships, mathematical formulas, and calculations. Ans. 5. The Examiner finds "these concepts have common characteristics":

> At least five cases have found concepts relating to a mathematical relationship or formula abstract, for example an algorithm for converting binary coded decimal to pure binary (*Benson*), a formula for computing an alarm limit (*Flook*), a formula describing certain electromagnetic standing wave phenomena (*Mackay Radio*), the Arrhenius equation *(Diehr),* and a mathematical formula for hedging (*Bilski*).

Id. The Examiner further finds several cases have found concepts relating to performing mathematical calculations to be directed to an abstract idea. *Id.*

Claim Construction.

As an initial matter, we note that . . . claim construction is helpful to resolve the question of patentability under § 101. *McRo v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1311–12 (Fed. Cir. 2016). We begin with a construction of the claim. *Cf. State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368, 1370 (Fed. Cir. 1998) ("[W]hether the . . . patent is invalid for failure to claim statutory subject matter under § 101[ ] is a matter of both claim construction and statutory construction.").;

Appellants argue that a "rationale establishing that the PCA model-

based scenario curve production and PCA factor loss risk amount calculation aspects of the claimed invention are fundamental economic practices is thus lacking." We interpret Appellants as arguing that, in construing the claims, the Examiner characterizes them at too high a level of abstraction. Defendants describe the claims at an impermissibly "high level of abstraction," such that they are "untethered from the language of the claims." *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1337 (Fed. Cir. 2016).

Because "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas," (*Mayo* , 132 S.Ct. at 1293); *see also In re TLI Commc'ns LLC Patent Litig.*, 823 F.3d 607, 611 (Fed. Cir. 2016)), "the claims are considered in their entirety to ascertain whether their character as a whole is directed to excluded subject matter." *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1346 (Fed. Cir. 2015). The Federal Circuit has previously cautioned that 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*, at 1313 (quoting *TLI Commc'ns*, 823 F.3d at 611; *see also Diehr*, 450 U.S. at 189 n.12, 101 S.Ct. 1048).

Specific Limitations.

In order to avoid oversimplification, we "look to whether the claims in these patents focus on a specific means or method that improves the relevant technology or are instead directed to a result or effect that itself is the abstract idea and merely invoke generic processes and machinery." *McRo*, at 1314 (quoting *Enfish LLC v. Microsoft Corp.*, 822 F.3d 1327, 1336 (Fed. Cir. 2016); *see also Rapid Litig. Mgmt. Ltd. v. CellzDirect, Inc.*, 827 F.3d 1042, 1048 (Fed. Cir. 2016)).

Appellants contend the claimed invention improves upon the technical field of data processing, specifically arguing the improvement is a reduction in the data processing load of a computer system, such as an exchange computer system. Appeal Br. 7 (citing Spec. ¶ 22) ("[t]he disclosed embodiments may thus decrease the processing load presented by the margin requirement determination"). Appellants further argue "[t]he decreased processing load is rooted in the inventors' recognition that a limited number of PCA model-based scenario curves is 'nonetheless capable of addressing correlation and volatility risks presented by [a] portfolio.'" *Id.* at 8 (quoting Spec. ¶ 19). "The limited number of scenario curves is nonetheless sufficient for margining purposes." *Id.* (quoting Spec. ¶ 22). Appellants argue the claimed invention is premised upon a more computationally manageable set of scenario curves (paragraph [0019]) than, for instance, full PCA-based simulations (e.g., Monte Carlo simulations) which prior art simulations have conventionally involved "billions or trillions of scenarios" and that "[i]mplementing a full Monte Carlo simulation for each such instance would be computationally infeasible. *Id.* (quoting Spec. ¶¶ 19, 22).

With respect to Appellants' PCA-based arguments, the Examiner finds the additional processor-based claimed limitations perform nothing more than producing, inputting, or collecting information. Ans. 13. We disagree.

"Software can make non-abstract improvements to computer technology just as hardware improvements can, and sometimes the improvements can be accomplished through either route." *Enfish*, at 1335. The Examiner does not reply to Appellants argument and evidence that the claims now render possible calculations that were computationally-infeasible according to the prior art. *See* Ans. 13.

We analyze the claimed advance over the art at Step 1 of the *Mayo/Alice* framework. We see "no reason to conclude that all claims directed to improvements in computer-related technology, including those directed to software, are abstract and necessarily analyzed at the second step of *Alice,* nor do we believe that *Alice* so directs." *Enfish*, at 1335. We find the claims assert a specific improvement in computer technology, an assertion which is not traversed in the Record, and therefore, are directed to an improvement to computer functionality. "That the improvement is not defined by reference to 'physical' components does not doom the claims. To hold otherwise risks resurrecting a bright-line machine-or-transformation test." *Enfish*, at 1340.

Because of the failure of the Examiner to address Appellants' argument regarding improvement of computer functionality, we find the rejection does not sufficiently demonstrate that the claims are directed to an abstract idea within the meaning of *Alice*. *See Enfish*, at 1336. Because the claims are not "directed to" an abstract idea, the inquiry ends. *McRo*, at 1312.

DECISION

The rejection of claims 1–25 under 35 U.S.C. § 101 is REVERSED.

REVERSED