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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* KEITH ALAN ANGUISH, SUNIL KIRAN  
CUTINHO, DMITRIY GLINBERG,  
SUNEEL IYER, DALE MICHAELS,  
and KETAN B. PATEL

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Appeal 2017-010344  
Application 13/213,703<sup>1</sup>  
Technology Center 3600

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Before JAMES R. HUGHES, JOHN A. EVANS, and  
CATHERINE SHIANG, *Administrative Patent Judges*.

SHIANG, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's rejection of claims 10 and 12–15, which are all the claims pending and rejected in the application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> Appellants identify Chicago Mercantile Exchange Inc. as the real party in interest. Br. 1.

## STATEMENT OF THE CASE

### *Introduction*

According to the Specification, the present invention relates to “trading and clearing of financial instruments. In particular, aspects of the invention relate to processing and clearing interest rate swaps.” Spec. ¶ 2.

Claim 10 is exemplary:

10. A system comprising:
  - a first computer system that includes:
    - a memory unit;
    - a processing unit coupled to the memory unit and configured to cause the first computer system at least to perform:
      - determining a first discount factor for a financial instrument based on a swap yield curve, wherein the financial instrument is associated with a start date;
      - generating a second discount factor based on an interest rate for discounting the first discount factor from the start date back to a spot date;
      - generating a swap value factor based on the first discount factor and the second discount factor;
      - determining a mark-to-market value for the financial instrument based on the swap value factor;
      - outputting the mark-to-market value; and
    - a second computer system connected to the first computer system and that includes:
      - a memory unit; and
      - a processing unit coupled to the memory unit and configured to cause the second computer system at least to perform:
        - altering a required margin account deposit requirement on a daily basis based on the mark-to-market value.

*References and Rejections<sup>2</sup>*

Claims 10 and 12–15 are rejected under 35 U.S.C. § 101 because they are directed to patent-ineligible subject matter. Final Act. 5–7.

Claims 10 and 12–15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rotman (US 2005/0203818 A9; Sept. 15, 2005), Mosler (US 2002/0010670 A1; January 24, 2002 ), Kajiwara (US 8,386,355 B1; February 26, 2013), and Scheinberg (US 7,376,614 B1; May 20, 2008). Final Act. 8–17.

ANALYSIS

We disagree with Appellants’ arguments. To the extent consistent with our analysis below, we adopt the Examiner’s findings and conclusions in (i) the action from which this appeal is taken and (ii) the Answer.<sup>3</sup>

*35 U.S.C. § 101*

The Examiner rejects the claims under 35 U.S.C. § 101 because they are directed to patent-ineligible subject matter. *See* Final Act. 5–7; Ans. 2–26. In particular, the Examiner concludes the claimed processes or functions can be performed by a human using a pen and paper. *See* Final Act. 6–7; Ans. 17–18. The Examiner determines the claims do not identify an inventive concept to transform the nature of the claims into a patent-eligible

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<sup>2</sup> Throughout this opinion, we refer to the (1) Final Rejection dated June 13, 2016 (“Final Act.”); (2) Appeal Brief dated February 13, 2017 (“Br.”); and (3) Examiner’s Answer dated May 10, 2017 (“Ans.”).

<sup>3</sup> We note the Examiner provides detailed responses to Appellants’ arguments (Ans. 2–27). Appellants do not critique the Examiner’s responses. As a result, Appellants have not shown error in such responses.

application. *See* Final Act. 6–7; Ans. 4–26. Appellants argue the Examiner erred. *See* Br. 3–20.

Appellants have not persuaded us of error. Section 101 of the Patent Act provides, “[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.” 35 U.S.C. § 101. However, the Supreme Court has long interpreted 35 U.S.C. § 101 to include implicit exceptions: “[l]aws of nature, natural phenomena, and abstract ideas” are not patentable. *E.g.*, *Alice Corp. Pty. Ltd. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014).

In determining whether a claim falls within an excluded category, we are guided by the Supreme Court’s two-step framework, described in *Mayo* and *Alice*. *Id.* at 217–18 (citing *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66, 75–77 (2012)). In accordance with that framework, we first determine what concept the claim is “directed to.” *See Alice*, 573 U.S. at 219 (“On their face, the claims before us are drawn to the concept of intermediated settlement, *i.e.*, the use of a third party to mitigate settlement risk.”); *see also Bilski v. Kappos*, 561 U.S. 593, 611 (2010) (“Claims 1 and 4 in petitioners’ application explain the basic concept of hedging, or protecting against risk.”).

Concepts determined to be abstract ideas, and thus patent ineligible, include certain methods of organizing human activity, such as fundamental economic practices (*Alice*, 573 U.S. at 219–20; *Bilski*, 561 U.S. at 611); mathematical formulas (*Parker v. Flook*, 437 U.S. 584, 594–95 (1978)); and mental processes (*Gottschalk v. Benson*, 409 U.S. 63, 69 (1972)). Concepts

determined to be patent eligible include physical and chemical processes, such as “molding rubber products” (*Diamond v. Diehr*, 450 U.S. 175, 191 (1981)); “tanning, dyeing, making water-proof cloth, vulcanizing India rubber, smelting ores” (*id.* at 183 n.7 (quoting *Corning v. Burden*, 56 U.S. 252, 267–68 (1854))); and manufacturing flour (*Benson*, 409 U.S. at 69 (citing *Cochrane v. Deener*, 94 U.S. 780, 785 (1876))).

In *Diehr*, the claim at issue recited a mathematical formula, but the Supreme Court held that “[a] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula.” *Diehr*, 450 U.S. at 176; *see also id.* at 192 (“We view respondents’ claims as nothing more than a process for molding rubber products and not as an attempt to patent a mathematical formula.”). Having said that, the Supreme Court also indicated that a claim “seeking patent protection for that formula in the abstract . . . is not accorded the protection of our patent laws, . . . and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment.” *Id.* (citing *Benson* and *Flook*); *see, e.g., id.* at 187 (“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.”).

If the claim is “directed to” an abstract idea, we turn to the second step of the *Alice* and *Mayo* framework, where “we must examine the elements of the claim to determine whether it contains an ‘inventive concept’ sufficient to ‘transform’ the claimed abstract idea into a patent-eligible application.” *Alice*, 573 U.S. at 221 (quotation marks omitted). “A claim that recites an abstract idea must include ‘additional features’ to

ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’” *Id.* (quoting *Mayo*, 566 U.S. at 77). “[M]erely requir[ing] generic computer implementation[] fail[s] to transform that abstract idea into a patent-eligible invention.” *Id.*

The PTO recently published revised guidance on the application of § 101. USPTO’s January 7, 2019 Memorandum, *2019 Revised Patent Subject Matter Eligibility Guidance* (“Memorandum”). Under that guidance, we first look to whether the claim recites:

- (1) any judicial exceptions, including certain groupings of abstract ideas (i.e., mathematical concepts, certain methods of organizing human activity such as a fundamental economic practice, or mental processes) (Step 2A, Prong 1); and
- (2) additional elements that integrate the judicial exception into a practical application (*see* MPEP § 2106.05(a)–(c), (e)–(h)) (Step 2A, Prong 2).

Only if a claim (1) recites a judicial exception and (2) does not integrate that exception into a practical application, do we then look to whether the claim:

- (3) adds a specific limitation beyond the judicial exception that is not “well-understood, routine, conventional” in the field (*see* MPEP § 2106.05(d)); or
- (4) simply appends well-understood, routine, conventional activities previously known to the industry, specified at a high level of generality, to the judicial exception. (Step 2B).

*See* Memorandum.

Turning to Step 2A, Prong 1 of the Memorandum, we agree with the Examiner that the rejected claims are patent ineligible because they are

directed to functions that can be performed by a human using a pen and paper. *See* Final Act. 6; Ans. 9, 26.

For example, claim 10 (with emphases) recites:

10. A system comprising:  
a first computer system that includes:  
    a memory unit;  
    a processing unit coupled to the memory unit and configured to cause the first computer system at least to perform:  
        *determining a first discount factor for a financial instrument based on a swap yield curve, wherein the financial instrument is associated with a start date;*  
        *generating a second discount factor based on an interest rate for discounting the first discount factor from the start date back to a spot date;*  
        *generating a swap value factor based on the first discount factor and the second discount factor;*  
        *determining a mark-to-market value for the financial instrument based on the swap value factor;*  
        *outputting the mark-to-market value;* and  
a second computer system connected to the first computer system and that includes:  
    a memory unit; and  
    a processing unit coupled to the memory unit and configured to cause the second computer system at least to perform:  
        *altering a required margin account deposit requirement on a daily basis based on the mark-to-market value.*

Claim 10 recites (i) “a first computer system that includes: a memory unit; a processing unit coupled to the memory unit and configured to cause the first computer system at least”; and (ii) “a second computer system connected to the first computer system and that includes: a memory unit; and a processing unit coupled to the memory unit and configured to cause the second computer system at least” for performing the above italicized functions. However, because all of the italicized functions can be otherwise

performed by a human using a pen and paper, they are like the mental processes in *CyberSource* and *Synopsys*. See *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372–73 (Fed. Cir. 2011) (“All of claim 3’s method steps can be performed in the human mind, or by a human using a pen and paper. . . . Such a method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101.”); *Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1146 (Fed. Cir. 2016) (“[W]e continue to ‘treat[ ] 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.’”) (citation omitted). As a result, we disagree with Appellants’ argument that the Examiner ignores claim limitations (Br. 6–7), and conclude claim 10 is directed to mental processes, and thus an abstract idea. See Memorandum, Step 2A, Prong 1 (Groupings of Abstract Ideas).

The dependent claims are directed to similar functions that can be otherwise performed by a human using a pen and paper, and Appellants have not shown such claims are directed to other non-abstract functions or processes. See claims 12–15. As a result, the dependent claims are similarly directed to mental processes, and thus an abstract idea.

Appellants’ assertion regarding pre-emption (Br. 9–11, 18) is unpersuasive, because “[w]hile preemption may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility . . . . Where a patent’s claims are deemed only to disclose patent ineligible subject matter under the *Mayo* framework, as they are in this case, preemption concerns are fully addressed and made moot.” *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015);

*see also OIP*, 788 F.3d at 1362–63 (“that the claims do not preempt all price optimization or may be limited to price optimization in the e-commerce setting do not make them any less abstract”).

Further, Appellants’ argument (Br. 11, 13–15) about *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016) is unpersuasive. In *McRO*, the Court determines:

Claim 1 of the ‘576 patent is focused on *a specific asserted improvement in computer animation*, i.e., the automatic use of rules of a particular type. . . . It is the incorporation of the claimed rules, not the use of the computer, that “improved [the] existing technological process” by allowing the automation of further tasks. . . .

Further, the automation goes beyond merely “organizing [existing] information into a new form” or carrying out a fundamental economic practice. *The claimed process uses a combined order of specific rules that renders information into a specific format that is then used and applied to create desired results: a sequence of synchronized, animated characters.*

*McRO*, 837 F.3d at 1314–15 (emphasis added) (citations omitted).

This case is different from *McRO* because unlike the claims of *McRO*, the rejected claims are not directed to “a specific asserted improvement in computer animation,” let alone “us[ing] a combined order of specific rules that renders information into a specific format that is then used and applied to create desired results: a sequence of synchronized, animated characters.” *McRO*, 837 F.3d at 1314–15. Contrary to the claims of *McRO* and as discussed above, the rejected claims are directed to patent-ineligible mental processes.

Turning to Step 2A, Prong 2 of the Memorandum, contrary to Appellants’ assertion (Br. 3–20), the rejected claims do not recite additional elements that integrate the judicial exception into a practical application.

Appellants’ argument that the claims “recite specific details about novel and inventive inputs that are collectively used to generate a swap value factor” (Br. 5) is unpersuasive because “a claim for a *new* abstract idea is still an abstract idea.” *Synopsys*, 839 F.3d at 1151. “[U]nder 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 . . . .” *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1376 (Fed. Cir. 2016) (citations omitted).

Appellants also cite paragraphs from the Specification and argue “the system of claim 10 is drawn to a technological improvement over existing system” because “[t]he combination of computer systems claimed in claim 10 results in an efficient system overall system that allows for reduced processing resources needed to track and manage a book of interest rate swaps.” Br. 8–9. However, our reviewing court has declared:

While the claimed system and method certainly *purport to accelerate the process of analyzing audit log data, the speed increase comes from the capabilities of a general-purpose computer, rather than the patented method itself. See Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Can. (U.S.)*, 687 F.3d 1266, 1278 (Fed. Cir. 2012) (“[T]he fact that the required calculations could be performed *more efficiently* via a computer does not materially alter the patent eligibility of the claimed subject matter.”).

*FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1095 (Fed. Cir. 2016) (emphases added).

Applying this reasoning to the rejected claims, we similarly find any purported “efficient system” comes from the capabilities of general-purpose computers (the recited “a first computer system” and “a second computer

system”), rather than the claimed functions. Similar to the claims of *FairWarning*, claim 10 is “not directed to an improvement in the way computers operate” and “the focus of the claims is not on . . . an improvement in computers as tools, but on certain independently abstract ideas that use computers as tools.” *FairWarning*, 839 F.3d at 1095.

Further, Appellants’ argument about the absence of any anticipation rejection (Br. 12–13, 15) is unpersuasive, because an anticipation rejection is determined under 35 U.S.C. § 102, which is a different statutory requirement. As the Supreme Court emphasizes: “[t]he ‘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) (emphasis added). Our reviewing court further guides that “[e]ligibility and novelty are separate inquiries.” *Two-Way Media Ltd. v. Comcast Cable Commc’ns, LLC*, 874 F.3d 1329, 1340 (Fed. Cir. 2017). Further, Appellants’ argument contradicts their own statement that “Congress intended for the patent eligibility of inventions to be evaluated independent of . . . 35 USC 102 and 35 USC 103” (Br. 18).<sup>4</sup>

Contrary to Appellants’ arguments (Br. 3–21), the claims are similar to the claims of *Synopsys* and do not contain the requisite inventive concept. *See Synopsys*, 839 F.3d at 1152. To the extent the claims add anything to

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<sup>4</sup> Appellants’ assertions that “the Office Action Fails to Consider Congress’s Intent in 35 USC 101 When Passing The Patent Act of 1952” and “The Office Action Violates the Administrative Procedures Act (APA) Because Its Rejection of the Claims Under the Purported *Alice* Test Is Arbitrary and Capricious” (Br. 18–20 (emphases omitted)) are speculative and unsubstantiated. Therefore, they are unpersuasive.

the abstract idea (such as “a first computer system” and “a second computer system connected to the first computer system”), such additions “merely aid in mental [processes] as opposed to computer efficacy, are not an inventive concept that takes the . . . [c]laims beyond their abstract idea.” Similar to the claims of *Synopsys*, the rejected claims “do not introduce a technical advance or improvement. They contain nothing that ‘amounts to significantly more than a patent upon the [abstract idea] itself.’” *Synopsys*, 839 F.3d at 1152 (citation omitted).

As a result, we conclude the rejected claims do not recite additional elements that integrate the judicial exception into a practical application. *See* Memorandum, Step 2A, Prong 2.

Finally, turning to Step 2B of the Memorandum, Appellants cite *BASCOM Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016) and argue “[t]he claims recite a non-conventional and non-generic arrangement of elements” because “[t]he Office Action provides no better explanation or analysis than that which the district court in *Bascom* provided” (Br. 16–18). Appellants’ attorney arguments are unpersuasive, because Appellants do not provide sufficient objective evidence to support their arguments. *See In re Geisler*, 116 F.3d 1465,1470 (Fed.Cir.1997) (“attorney argument [is] not the kind of factual evidence that is required to rebut a prima facie case of obviousness”); *Meitzner v. Mindick*, 549 F.2d 775, 782 (CCPA 1977) (“Argument of counsel cannot take the place of evidence lacking in the record.”).

As a result, Appellants have not persuaded us the Examiner erred with respect to the Memorandum’s Step 2B analysis. *See* Memorandum, Step 2B.

Because Appellants have not persuaded us the Examiner erred, we sustain the Examiner's rejection of claims 10 and 12–15 under 35 U.S.C. § 101.

*35 U.S.C. § 103*

On this record, the Examiner did not err in rejecting claim 10.

Appellants argue:

Claim 10 requires a first computer system that configured to perform “outputting the mark-to-market value” and a second computer system configured to perform “altering a required margin account deposit requirement on a daily basis based on the mark-to-market value.” *The Applicant respectfully submits that that Office Action does not even allege why it would have been obvious to perform these functions with two computer systems in a modified system of Rotman.*

Moreover, besides passing mentions (see Office Action, pp. 12-14) to Kajiwara and Scheinberg being in the same general area of teachings, *the Office Action provides no reasonable basis why a person having ordinary skill in the art would have undertaken the effort to modify the system of Rotman to incorporate the omitted features recited in Applicants' claims.*

Br. 21 (emphasis added).

Appellants' arguments contradict the record, as the Examiner determines:

It would have been obvious to one having ordinary skill at the time of the invention was made to modify the electronic system of Rotman to include the electronic clearance system of Kajiwara since Kajiwara teaches the motivation of determining the amount of guaranty deposit in order to cover any potential losses in the event a trader defaults.

It would have been obvious to one having ordinary skill at the time of the invention was made to modify the generic electronic systems of Rotman to includes specific computer components as taught by Scheinberg since Scheinberg provides the motivation of the computer components needed to implement electronic exchange computer system (i.e. first computer system) and teaches the computer components of the electronic clearance system (i.e. second computer system) needed to implement electronic clearing functions in order to clear transactions regarding trades of products on the exchange system.

Final Act. 12–14.

To the extent Appellants are asserting the above rationales provided by the Examiner do not constitute the requisite “articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” (*KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007)), Appellants have not provided *any* analysis to support that assertion.<sup>5</sup> As a result, Appellants have not persuaded us of Examiner error.

Because Appellants have not persuaded us the Examiner erred, we sustain the Examiner’s rejection of independent claim 10.

We also sustain the Examiner’s rejection of corresponding dependent claims 12–15, as Appellants do not advance separate substantive arguments about those claims.

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<sup>5</sup> As a result, Appellants’ assertion that “[w]ithout any reasonable basis, it appears the Office Action is fraught with impermissible hindsight reasoning” (Br. 21) is also unpersuasive.

Appeal 2017-010344  
Application 13/213,703

DECISION

We affirm the Examiner's decision rejecting claims 10 and 12–15.

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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED