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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MICHAEL MARKOV, VADIM MOTTL, and ILYA MUCHNIK

Appeal 2016-004386[1]
Application 14/095,684[2]
Technology Center 3600

Before PHILIP J. HOFFMANN, KENNETH G. SCHOPFER, and TARA L. HUTCHINGS, *Administrative Patent Judges*.

HUTCHINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 118–123. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

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[1] Our decision references Appellants' Appeal Brief ("App. Br.," filed Aug. 3, 2015) and Reply Brief ("Reply Br.," filed Mar. 17, 2016), and the Examiner's Answer ("Ans.," mailed Jan. 20, 2016), Advisory Action ("Adv. Act.," mailed April 15, 2015), and Final Office Action ("Final Act.," mailed Dec. 2, 2014).

[2] Appellants identify "Markov Processes International, LLC" as the real party in interest. App. Br. 2.

CLAIMED INVENTION

> Appellants'
>
> present invention provides methods and systems for estimating time-varying factor exposures in models or problems, such as, for example, in the RBSA model and other financial and economic models or problems, through a multi-factor dynamic optimization of the models or problems, while meeting the constraints for the estimated time-varying factor exposures.

Spec. 8, ll. 2–6. Claims 118, 122, and 123 are the independent claims on appeal. Claim 118, reproduced below, is illustrative of the subject matter on appeal.

> 118. A method for determining at least one factor exposure of an asset collection for each of a plurality of time intervals in a period of time, the asset collection including at least one asset, comprising:
>
> determining an objective function which includes an estimation error term or at least one transition error term, the estimation error term representing an estimation error at each time interval between a performance of the asset collection and a sum of products of each of the at least one factor exposure and its respective factor, the at least one transition error term representing a transition error at each time interval after a first time interval for each of the at least one factor exposure between the time interval and a prior time interval;
>
> defining at least one hedging constraint or leveraging constraint on the at least one factor exposure for at least one of the plurality of time intervals; and
>
> determining the at least one factor exposure by optimizing a value of the objective function, wherein each step of determining the objective function and the step of determining the least one factor exposure is performed by at least one processor.

REJECTION[3]

Claims 118–123 are rejected under 35 U.S.C. § 101 as directed to ineligible subject matter in the form of an abstract idea.

ANALYSIS

Appellants argue independent claims 118, 122, and 123 as a group. *See* App. Br. 4–10. We select independent claim 118 as representative. The remaining claims stand or fall with claim 118. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Supreme Court in *Alice* reiterated a two-step framework, set forth previously in *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1300 (2012), "for distinguishing patents that claim laws of nature, natural phenomena, and abstract ideas from those that claim patent-eligible applications of these concepts." *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347, 2355 (2014). The first step in that analysis is to "determine whether the claims at issue are directed to one of those patent-ineligible concepts." *Id.* If so, the second step is to consider the elements of the claims "individually and 'as an ordered combination"' to determine whether the additional elements "'transform the nature of the claim' into a patent-eligible application." *Id.* (citing *Mayo*, 132 S. Ct. at 1298, 1297). 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.* (citing *Mayo*, 132 S. Ct. at 1294).

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[3] The Examiner has withdrawn the double patenting and § 112, second paragraph, rejections. Adv. Act. 2.

In rejecting the claims under 35 U.S.C. § 101, the Examiner determines that the claims are "directed to a method for determining at least one factor exposure of an asset allocation." Final Act. 6. We have reviewed Appellants' arguments that the claims are not directed to an abstract idea (*see* App. Br. 4–7; *see also* Reply Br. 2), yet we are not persuaded of Examiner error.

Here, independent claim 118 recites a method for "determining at least one factor exposure of an asset collection" by performing a sequence of three steps: (1) determining an objective function, (2) defining at least one hedging constraint or leveraging constraint, and (3) determining the at least one factor exposure by optimizing a value of the objective function. Each of the recited steps can be performed entirely by mental thought. The Background of the Specification describes various factor models and their respective shortcomings. *See* Spec. 1–7. Moreover, Appellants' invention provides "**[a] solution for dynamic multi-factor problems in finance**" that "can be applied to any dynamic multi-factor financial or economic problem." Spec. 15, ll. 13–16. Thus, the focus of Appellants' claims is on a series of steps for determining a factor exposure of an asset collection, i.e., a mental process or mathematical algorithm. *See* Final Act. 6.

We agree with the Examiner that there is no meaningful distinction between the concept of risk hedging in *Bilski v. Kappos*, 130 S. Ct. 3218 (2010), and the concept of determining a factor exposure of an asset collection here. *See* Ans. 3 (analogizing Appellants' claims to those in *Bilski*); *see also Bilski*, 130 S. Ct. at 3223–24 (2010) ("Claim 1 describes a series of steps instructing how to hedge risk."); *Gottschalk v. Benson*, 409 U.S. 63, 65 (1972) ("The procedures set forth in the present claims . . . are a

generalized formulation for programs to solve mathematical problems of converting one form of numerical representation to another."); *Electric Power Grp., LLC v. Alstom*, 830 F.3d 1350, 1353 ("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") (citations omitted).

The Federal Circuit has held that if a method can be performed by human thought alone, or by a human using pen and paper, it is merely an abstract idea and is not patent-eligible under § 101. *CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1373 (Fed. Cir. 2011) ("[A] method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101."). Additionally, mental processes, e.g., determining a function, defining a constraint, and determining a factor exposure, as recited in claim 118, remain unpatentable even when automated to reduce the burden on the user of what once could have been done with pen and paper. *Id.* at 1375 ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*."). Independent claim 118 therefore is directed to an abstract idea, because it can be performed by human thought alone or by a human using pen and paper.

Because we find that claim 118 is directed to an abstract idea, it must include an "inventive concept" in order to be patent-eligible, i.e., there must be an element or combination of elements that is sufficient to ensure that the claim in practice amounts to significantly more than the abstract idea itself. Here, the only additional element that appears *not* to belong to the abstract idea is the requirement for the step of "determining the at least one factor

exposure" to be "performed by at least one processor." Appellants appropriately do not argue that the generically claimed "processor" satisfies step two of the *Alice* framework. *See, e.g.*, *DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) (citing *Alice*, 134 S. Ct. at 2358) ("after *Alice*, there can remain no doubt: recitation of generic computer limitations does not make an otherwise ineligible claim patent-eligible").

Appellants argue that the claims are directed "to much more than [asset reconciliation], such as, but not limited to, defining a hedging constraint or a leveraging constraint, determining a factor exposure, and optimizing a value of the objective function."[4] App. Br. 8; *see also* Reply Br. 3–4. Rather than constituting an inventive concept significantly more than the abstract idea, these limitations are, in fact, themselves the abstract idea.

Appellants argue that "these additional features [e.g., defining a hedging constraint, etc.] are not well-understood, routine, and conventional activities previously known to the industry." *Id.* Appellants charge that these claimed steps (e.g., defining a hedging constraint or a leveraging constraint, determining a factor exposure, and optimizing a value of the objective function) are novel. *Id.*; *see also id.* at 10 (arguing novelty); Reply Br. 6 (arguing novel subject matter).

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[4] Appellants assert that the Examiner characterized the claims as being directed to "asset reconciliation." App. Br. 8. In fact, the Examiner characterized the claims as being directed to determining at least one factor exposure of an asset allocation. *See* Final Act. 6; *see also* Adv. Act. 2; Ans. 2.

Appellants' argument is not persuasive at least because a finding of novelty or non-obviousness does not automatically lead to the conclusion that the claimed subject matter is patent-eligible. "Groundbreaking, innovative, or even brilliant discovery does not by itself satisfy the § 101 inquiry." *Ass'n. for Molecular Pathology v. Myriad Genetics, Inc.*, 133 S. Ct. 2107, 2117 (2013). Although the second step in the *Alice* framework is termed a search for an "inventive concept," the analysis is not an evaluation of novelty or non-obviousness, but rather, a search for "'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 [patent-ineligible concept] itself.'" *Alice Corp.*, 134 S. Ct. at 2355. A novel and nonobvious claim directed to a purely abstract idea is, nonetheless, patent-ineligible. *See Mayo*, 566 U.S. at 90. *See also Diamond v. Diehr*, 450 U.S. 175, 188–89 (1981) ("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 categories of possibly patentable subject matter.").

Appellants argue that the invention "provide[s] improvements in the operation of a processor/memory arrangement" and "solves a technological problem that was in conventional industry practice." App. Br. 9. Yet, Appellants offer no persuasive argument or technical reasoning to support that position. Here, we understand the focus of Appellants' claimed invention to be on a process that qualifies as an abstract idea (i.e., determining at least one factor exposure of an asset collection) for which a computer is used in its ordinary capacity, and not on any improvement in computer capabilities. *See Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327,

1336 (Fed. Cir. 2016) (the relevant question at step one is "whether the focus of the claim is on the specific asserted improvement in computer capabilities . . . or, instead, on a process that qualifies as an "abstract idea' for which computers are invoked merely as a tool"); *see also* Spec 15, l. 13 (describing invention as a solution for multi-factor problems in finance, not an improvement in computer capabilities).

Appellants argue that the claims "would not preempt the making, using, and selling of basic tools of scientific and technological work." App. Br. 9. We find this argument unpersuasive, at least because preemption is not a separate test under the *Alice* framework, and the absence of complete preemption does not demonstrate patent eligibility. *See Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015) ("preemption may signal patent ineligible subject matter, [but] the absence of complete preemption does not demonstrate patent eligibility").

We are not persuaded, for the reasons set forth above, that the Examiner erred in rejecting independent claim 118 under 35 U.S.C. § 101. Therefore, we sustain the Examiner's rejection of claim 118 and claims 122 and 123, which fall with claim 118.

Appellants argue dependent claims 119–121 are patent-eligible for the same reasons set forth with respect to independent claim 118. App. Br. 9–10. Therefore, we also sustain the Examiner's rejection of those claims under § 101.

DECISION

We AFFIRM the rejection of claims 118–123 under 35 U.S.C. § 101.

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

AFFIRMED