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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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Ex parte KARL MILLAR, PARITOSH DESAI, and
WILLIAM BARROWS PEALE

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Appeal 2016-007136
Application 12/481,185[1]
Technology Center 3600

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Before MEREDITH C. PETRAVICK, JAMES A. TARTAL,
and PHILIP J. HOFFMANN, *Administrative Patent Judges.*

PETRAVICK, *Administrative Patent Judge.*

DECISION ON APPEAL

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STATEMENT OF THE CASE

Karl Millar et al. (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1, 2, 4–6, 8, 9, 11, 12, 14–16, 18, 19, 21–27, and 29–31. Claims 3, 7, 13, and 17 were canceled prior to the Final Office Action, and claims 10, 20, and 28 were canceled after the Final Office Action. *See* App. Br. 13.

We have jurisdiction under 35 U.S.C. § 6(b).

SUMMARY OF DECISION

We AFFIRM. [2]

THE INVENTION

Claims 1, 11, and 21 are independent and recite corresponding, methods, systems, and articles. Claim 1, reproduced below, is illustrative of the subject matter on appeal.

> 1. A method for tuning demand coefficients for a first product category, useful in association with a pricing optimization system, the method comprising:
>
> receiving data from at least one store, wherein the data includes transactions associated with at least one product category;
>
> analyzing, using a processor, the received data to identify a first product category with a deficient pricing history that is deficient with respect to generation of demand coefficients;

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[2] Our decision references the Appellants' Appeal Brief ("App. Br.," filed Oct. 28, 2015), the Appellants' Reply Brief ("Reply Br.," filed June 29, 2016), the Examiner's Answer ("Ans.," mailed Apr. 29, 2016), and the Final Office Action ("Final Act.," mailed Apr. 28, 2015).

selecting price elasticity and uncertainty values for the first product category from at least one other product category designated as a comparable product category;

estimating, using a processor, tuning parameters for the first product category, wherein the tuning parameters include price elasticity mean and price elasticity standard deviation, and wherein estimating the tuning parameters uses the selected price elasticity and uncertainty values from the at least one other product category;

generating, using a processor, a modified likelihood function by applying a normally distributed price elasticity term,

generating, using a processor, tuned demand coefficients by applying the estimated tuning parameters to the modified likelihood function and maximizing the modified likelihood function;

exporting defined groups of products and attributes within the data to a file and processing the file by separate processing to enhance a processing speed of at least one said processor,

reformatting the data by aggregating elements of the data and processing the aggregated elements together as a single element to reduce a processing time of at least one said processor; and

outputting the generated tuned demand coefficients to the pricing optimization system for product price setting.

EVIDENCE

The Examiner relies upon the following as evidence of unpatentability:

| Ramesh | US 5,884,299 | Mar. 16, 1999 |
| Ouimet | US 6,078,893 | June 20, 2000 |

Arnold Zellner, *An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias,* Am. Stat. Ass'n J. 348 (1982) ("Zellner").

Stephen J. Hoch et al., *Determinants of Store-Level Price Elasticity* 32 J. of Marketing Res. 17 (1995) ("Hoch").

The Examiner took official notice, and Appellants did not traverse adequately, that "[i]**t is old and well known to iterate or repeat steps with new information or to further refine a mathematical answer.**" Final Act. 7–8 ("APA").

REJECTIONS

The Examiner rejected the claims as follows:

claims 1, 2, 4–6, 8, 9, 11, 12, 14–16, 18, 19, 21–27, 29 and 31[3] under 35 U.S.C. § 101 as being directed to non-statutory subject matter;

claims 1, 2, 6, 11, 12, 16, 21, 22, and 25 under pre-AIA 35 U.S.C. § 103(a) over Ouimet, Zellner, and Ramesh;[4]

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[3] The statement of the rejection on page 2 of the Examiner's Answer includes claim 10. We consider this to be a typographical error as claim 10 has been canceled. *See* Reply Br. 3.

[4] In the Final Action, the Examiner rejected claims 1–2, 6, 11–12, 16, 21–22, and 25 over a combination of Ouimet and Zellner and rejected claims 10, 20, and 28 over Ouimet, Zellner, and Ramesh. *See* Final Act. 10–12, 21–22. The Examiner entered an After-Final Amendment canceling claims 10, 20, and 28 and incorporating the elements recited in claims 10, 20, and 28 into independent claims 1, 11, and 21. *See* Reply Br. 2; Advisory Action (mailed Aug. 20, 2015). Thus, the rejection before us is claims 1–2, 6, 11–12, 16, 21–22, and 25 under pre-AIA 35 U.S.C. § 103(a) over Ouimet, Zellner, and Ramesh. Ans. 2; App. Br. 13, 16; Reply Br. 2. Likewise, the other prior art based rejection of dependent claims additionally include Ramesh.

claims 4, 5, 8, 14, 15, 18, 23, 24, 26, 29 and 31 under pre-AIA

35 U.S.C. § 103(a) over Ouimet, Zellner, Ramesh, and Hoch; and

claims 9, 19, and 27 under pre-AIA 35 U.S.C. § 103(a) over Ouimet,

Zellner, Ramesh, and APA.

ANALYSIS

Non-Statutory Subject Matter

The Examiner rejected claims 1, 2, 4–6, 8, 9, 11, 12, 14–16, 18, 19,

21–27, 29 and 31 under 35 U.S.C. § 101 as being directed to patent

ineligible subject matter. Final Act. 8–9; Ans. 2.

Under 35 U.S.C. § 101, an invention is patent-eligible if it claims a

"new and useful process, machine, manufacture, or composition of matter."

35 U.S.C. § 101. The Supreme Court, however, has long interpreted § 101

to include an implicit exception: "[l]aws of nature, natural phenomena, and

abstract ideas" are not patentable. *See, e.g., Alice Corp. Pty. Ltd. v. CLS

Bank Int'l,* 134 S. Ct. 2347, 2354 (2014).

The Supreme Court, in *Alice,* reiterated the two-step framework

previously set forth in *Mayo Collaborative Services v. Prometheus

Laboratories, Inc.,* 566 U.S. 66 (2012), "for distinguishing patents that claim

laws of nature, natural phenomena, and abstract ideas from those that claim

patent-eligible applications of those concepts." *Alice Corp.,* 134 S. Ct.

at 2355. 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 the

claims are not directed to a patent-ineligible concept, e.g., an abstract idea,

the inquiry ends. Otherwise, the inquiry proceeds to the second step where

the elements of the claims are considered "individually and 'as an ordered

5

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 79, 78).

The Court acknowledged in *Mayo,* that "all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas." *Mayo,* 566 U.S. at 71. Therefore, the Federal Circuit has instructed that claims are to be considered in their entirety to determine "whether their character as a whole is directed to excluded subject matter." *McRO, Inc. v. Bandai Namco Games Am., Inc.,* 837 F.3d 1299, 1312 (Fed. Cir. 2016) (quoting *Internet Patents Corp. v. Active Network, Inc.,* 790 F.3d 1343, 1346 (Fed. Cir. 2015)).

Appellants rely upon the same argument regarding the patent eligibility of independent claims 1, 11, and 21 to challenge this rejection and make no separate arguments concerning the patent eligibility of the dependent claims. *See* App. Br. 33–37. We select independent claim 1 as representative. Thus, the remainder of the claims stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner determined that:

> [The claims] are directed to receiving data, analyzing the data, selecting price elasticity and uncertainty values, estimating tuning parameters, generating a function, generating demand coefficients, and outputting those coefficients. These elements essentially amount to determining demand coefficients for product categories through mathematical means and is a practice similar to those found by the courts to be abstract.

Final Act. 8; *see Parker v. Flook,* 437 U.S. 584, 595 (1978) ("If a claim is directed essentially to a method of calculating, using a mathematical formula, even if the solution is for a specific purpose, the claimed method is

nonstatutory."); *Intellectual Ventures I LLC v. Capital One Financial Corp.*, 850 F.3d 1332, 1340 (Fed. Cir. 2017) ("[A]n invention directed to collection, manipulation, and display of data [is] an abstract process.").

Appellants do not dispute the Examiner's determination that the claims are directed to an abstract idea but argue:

> However, even if one or more of the features are considered to be an abstract idea (i.e., mathematical relationship/formula), the independent claims expressly recite manners of reducing processing time of a processor which adds significantly more than any alleged abstract idea to render the claims statutory. . . .

App. Br. 34.

Applying step two of the *Alice* analysis, we "determine whether the claims do significantly more than simply describe [the] abstract method" and thus transform the abstract idea into patentable subject matter. *Ultramercial*, 772 F.3d at 715. We look to see whether there are any "additional features" in the claims that constitute an "inventive concept," thereby rendering the claims eligible for patenting even if they are directed to an abstract idea. *Alice*, 134 S. Ct. at 2357. Those "additional features" must be more than "well-understood, routine, conventional activity." *Mayo*, 132 S. Ct. at 1298.

Appellants argue that the following claim elements add significantly more because they expressly recite manners of reducing processing time of a processer itself. App. Br. 34–37; Reply Br. 13–18. The claim elements are:

> exporting defined groups of products and attributes within the data to a file and processing the file by separate processing to enhance a processing speed of at least one said processor,

> reformatting the data by aggregating elements of the data and processing the aggregated elements together as a single element to reduce a processing time of at least one said processor.

7

The Appellants state, "[i]n fact, the specification reveals that by maintaining the file 'a more streamlined (abbreviated) dataset may be used in processing, thereby effectively speeding up processing time.'" Spec. ¶ 75.

The Examiner disagrees and finds that the claim elements describe "the removal of the load from one processor to put it on another" and that "the computer carrying out the method is performing in a well-understood, routine, and conventional way, and that further supports that the claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception." Ans. 9–10. Appellants disagree because separate processing is not a function listed in the Update of July 2015 to the Interim Guidance ("Update")[5] as a well-understood, routine, conventional activity. Reply Br. 17–18.

We are not persuaded by Appellants' argument the claim elements recite additional features that are more than well-understood, routine, and conventional activity. The list of computer functions references by Appellants are merely examples and not an exhaustive list. *See* Update, 7. Indeed, the Update states, "examiners should rely on what the courts have recognized, or those in the art would recognize, as elements that are well-understood, routine and conventional." *Id.* "Whether something is well-understood, routine, and conventional to a skilled artisan at the time of the patent is a factual determination." *Berkheimer v. HP Inc.,* 881 F.3d 1360,

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[5] available at https://www.uspto.gov/sites/default/files/documents/ieg-july-2015-update.pdf.

1369 (Fed. Cir. 2018); *See also* Changes in Examination Procedure Pertaining to Subject Matter Eligibility.[6]

Separate processing to enhance processing speed is well-understood, routine, conventional activity. *See Appistry, Inc. v. Amazon.com Inc.,* 2015 WL 4210890, at *4–5 (W.D. Wash July 9, 2015)[7] ("That computers are capable of dividing a task between two or more linked computers in order to complete the task more quickly or more efficiently is similarly basic."); *see also Coho Licensing, LLC v. Glam Media, Inc.,* 2017 WL 6210882, at *5–6 (N.D. Cal. Jan. 23, 2017)[8] (determining that a claim for distributed processing of data to be an abstract idea without a limiting concept); *see also* Final Act. 21 (quoting Ramesh 8:25–34). Reformatting the data by aggregating elements of the data and processing the aggregated elements together as a single element to reduce a processing time of the processor is well-understood, routine, conventional activity. For example Ramesh states:

> The performance of aggregate or grouping functions is a key factor in any database system's performance as measured by the Transaction Processing Council D (TPCD) industry benchmark. Aggregation and grouping is a key operation in decision support systems and data warehouse workloads. In many applications, more than 70% of the queries perform aggregation or group. Thus, improvements in the performance of aggregation or grouping lead directly to significant improvements in application workloads.

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[6] available at https://www.uspto.gov/sites/default/files/documents/memo-berkheimer-20180419.PDF.

[7] affirmed in *Appistry, Inc. v. Amazon.com, Inc.,* 676 Fed. Appx. 1007 (Fed. Cir. 2017).

[8] affirmed in *Coho Licensing LLC, v. Oath, Inc.,* 710 Fed. Appx. 892 (Fed. Cir. 2018).

Ramesh, 3:30–39; *see* Final Act. 21–22 (quoting Ramesh, 3:30–39).

Evaluating these claimed elements either individually or as an ordered combination with remaining claimed elements, we conclude that the claims recite no more than the use of generic computer components and conventional computer data processing activities. Accordingly, we sustain the rejection of claims 1, 2, 4–6, 8, 9, 11, 12, 14–16, 18, 19, 21–27, 29 and 31 under 35 U.S.C. § 101 as being directed to patent ineligible subject matter is affirmed.

Obviousness

Over Ouimet, Zellner, and Ramesh

The Examiner rejected claims 1, 2, 6, 11, 12, 16, 21, 22, and 25 under pre-AIA 35 U.S.C. § 103(a) over Ouimet, Zellner, and Ramesh. *See* Final Act. 10–12, 21–22.

Independent claim 1 recites, "selecting price elasticity and uncertainty values for the first product category from at least one other product category designated as a comparable product category." Independent claims 11 and 21 recite similar limitations. Appellants argue that none of the combinations of the cited references teach or disclose this limitation. App. Br. 16–22; Reply Br. 3–8. Appellants' argument is persuasive.

The Examiner relies upon Ouimet and Zellner, individually, as disclosing the limitation and provides no sufficient explanation or rationale as to how a combination of Ouimet and Zellner discloses the limitation. *See* Final Act. 5, 11. First, the Examiner cites column 6, lines 1–26 and column 11, lines 26–33 of Ouimet as disclosing this limitation. Final Act. 5, 11. As Appellants argue, however, the cited portions of Ouimet discloses

correlation between operational variables of different items, as opposed to using the price elasticity and uncertainty values from one or more comparable product categories to determine tuning parameters. App. Br. 18–20; Reply Br. 6. Second, the Examiner cites to Zellner to teach that analysis can occur between different items or categories. Final Act. 5, (citing Zellner 363); Ans. 6 (repeating the Final Action). The Examiner cites page 363 of Zellner and states that Zellner discloses that "different micro-units are characterized by the same regression coefficients." As Appellants again argue, the cited portion of Zellner does not teach using the price elasticity and uncertainty values from one or more comparable product categories to determine tuning parameters. App. Br. 19–20; Reply Br. 6–8; *see also* Final Act. 15–16 (Zellner "does not explicitly teach that the calculation of price elasticity takes into account other product categories.").

Accordingly, we do not sustain the rejection of claims 1, 11, and 21, and claims 2, 6, 12, 16, 22, and 25, dependent thereon, under pre-AIA 35 U.S.C. § 103(a) over Ouimet, Zellner, and Ramesh.

*Obviousness over Ouimet, Zellner, Ramesh, and Hoch and
Obviousness over Ouimet, Zellner, Ramesh, and APA*

The Examiner rejected claims 4, 5, 8, 14, 15, 18, 23, 24, 26, 29, and 31 under pre-AIA 35 U.S.C. § 103(a) over Ouimet, Zellner, Ramesh, and Hoch, and claims 9, 19, and 27 under pre-AIA 35 U.S.C. § 103(a) over Ouimet, Zellner, Ramesh, and APA. Final Act. 14–20. Claims 4, 5, 8, 9, 14, 15, 18, 19, 23, 24, 26, 27, 29, and 31 depend directly or indirectly from either claim 1, 11, or 21. For the same reasons, we also do not sustain these rejections of dependent claims 4, 5, 8, 9, 14, 15, 18, 19, 23, 24, 26, 27, 29, and 31. *See In re Fritch,* 972 F.2d 1260, 1266 (Fed. Cir. 1992) ("dependent

claims are nonobvious if the independent claims from which they depend are nonobvious.").

DECISION

The decision of the Examiner to reject claims 1, 2, 4–6, 8, 9, 11, 12, 14–16, 18, 19, 21–27, 29 and 31 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). *See* 37 C.F.R. § 41.50(f).

AFFIRMED