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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE
THE PATENT TRIAL AND APPEAL BOARD

Ex parte TROND HELLEM BØ¹

Appeal 2016-004724
Application 13/325,708
Technology Center 2800

Before MARK NAGUMO, KAREN M. HASTINGS, and
CHRISTOPHER L. OGDEN, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

Trond Hellem Bø (“Bø”) timely appeals under 35 U.S.C. § 134(a) from the Final Rejection² of all pending claims 1–20. We have jurisdiction. 35 U.S.C. § 6. We affirm.

¹ The real party in interest is identified as Schlumberger Technology Corporation. (Appeal Brief, filed 9 September 2015 (“Br.”), 2.)

² Office Action mailed 13 March 2015 (“Final Rejection”; cited as “FR”).

OPINION

A. Introduction³

The subject matter on appeal relates to a method (independent claim 1), a non-transitory computer-readable media (independent claim 8), and a system (independent claim 15) for processing seismic data of a geologic environment.

According to the '708 Specification, “[d]etecting and extracting edges in seismic volumes corresponding to faults may be a difficult problem to handle in an automated fashion.” (Spec. 6 [0024].) The Specification indicates that in prior art methods, “[a] method of edge detection that uses a Radon transform may take the integral, *e.g.*, sum of values, along ‘all possible lines,’ and reports the maximum sum of values.” (*Id.* at 1 [0002].) In contrast, the Specification reveals “an embodiment may include a point centered approach that involves using a statistical test, rather than an integral (*e.g.*, testing statistically for evidence of a line passing through a plurality of points in a 2D image).” (*Id.* at 6 [0025].) Somewhat more particularly, the Specification explains that “[s]uch statistical tests may involve determination of a statistical significance statistic (‘SSS’), such as a z-statistic.” (*Id.*) In another embodiment, “[t]he statistical test may include a parametric test, . . . [h]owever, . . . calculating $-\log(P(SSS))$ (*i.e.*, negative $\log(P(SSS))$) may become more difficult and more

³ Application 13/325,708, *Line and edge detection and enhancement*, filed 14 December 2011, claiming the benefit of a provisional application filed 6 May 2011. We refer to the “’708 Specification,” which we cite as “Spec.”

expensive.” (*Id.* at 7 [0029].) The Specification indicates that various approximations may be made, such as assuming normal distributed data where a parametric test is used. (*Id.*)

Claim 1 is representative and reads:

A method for processing seismic data of a geologic environment, comprising:

identifying a plurality of data values related to a first object defined by a first plurality of points within a volume of the geologic environment, wherein the first object intersects a second object defined by a second plurality of points within the volume;

calculating a statistical significance statistic related to the second object;

interpolating a P-value related to the statistical significance statistic;

determining a significant P-value taken over the second object, wherein the significant P-value comprises a minimum P-value that provides a maximum negative $\log(P(\text{statistical significance statistic}))$; and

storing a seismic attribute value that is based at least in part on the determining [sic] a significant P-value.

(Claims App., Br. 19; some indentation, paragraphing, and emphasis added.)

The Examiner maintains the following ground of rejection^{4, 5}:

Claims 1–20 stand rejected under 35 U.S.C. §101 as being drawn to judicially-excepted subject matter.

⁴ Examiner’s Answer mailed 2 February 2016 (“Ans.”).

⁵ Because this application was filed before the 16 March 2013 effective date of the America Invents Act, we refer to the pre-AIA version of the statute.

B. Discussion

The Board’s findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

Initially, we find Bø argues for patentability exclusively based on limitations recited in claim 1. (Br. 17–18.) For independent claim 8, Bø relies on the arguments challenging the rejection of claim 1 (*id.*), and for remaining independent claim 15 simply adds that it is “directed to a system that includes a processor and memory as well as instructions” (*id.* at 18). Accordingly, Bø argues claims 1–20 as a group. We select claim 1 as the representative claim for this group. Remaining claims 2–20 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner sets forth (FR 3) and applies (*id.* at 4) the two-step analytical framework set forth by the Supreme Court, first in *Mayo*,⁶ and explained further in *Alice*,⁷ for determining whether claimed subject matter is judicially-excepted from patent-eligibility under 35 U.S.C. § 101.

According to *Alice* step one, “[w]e must first determine whether the claims at issue are directed to a patent-ineligible concept,” such as an abstract idea. *Alice*, 134 S. Ct. at 2355.

In this regard, the Examiner determines that the independent claims “are directed to a series of statistical steps for the purpose of identifying objects within seismic data in a geologic environment.” (FR 4, ll. 3–4.)

⁶ *Mayo Collaborative Services v. Prometheus Labs., Inc.*, 566 U.S. 56, 72–73, 132 S. Ct. 1289, 1303-1304 (2012).

⁷ *Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S. Ct. 2347, 2354 (2014).

We understand the Examiner’s position to be that “a series of statistical steps for the purpose of identifying objects within seismic data in a geologic environment” is an abstract idea, which would be consistent with the Examiner’s determination that “the claimed invention is directed to a judicial exception, (i.e., . . . an abstract idea).” (FR 4, ll. 1–2.)

Bø does not challenge the Examiner’s characterization that claim 1 is directed to “a series of statistical steps for the purpose of identifying objects within seismic data in a geologic environment.” Nor does Bø challenge that what claim 1 is directed to is an abstract idea. Accordingly, we move to the *Alice* step two determination.

Step two has been described as “a 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 concept itself.’” *Alice*, 134 S. Ct. at 2355 (*quoting Mayo*, 566 U.S. at 73 (2012)).

In this regard, the Examiner determines that “[t]he claims do not include additional elements that are sufficient to amount to significantly more than the judicial exception because the method of using statistics to identify statistically significant data values among a plurality of data values would be routinely used by those of ordinary skill in the art.” (FR 4, ll. 4–7.)

Bø also does not challenge the Examiner’s step two determination.

We reproduce Bø’s entire discussion on *Alice*:

The “abstract idea” in *Alice* is akin to that found in *Bilski*. As simply stated, both were found to be fundamental economic practices long prevalent in our system of

commerce. The pending claims are not directed to such practices; thus, Alice is inapposite.

Br. 15; *accord* Reply⁸ 9.

In the Reply, Bø adds:

Surely, Alice, which addressed intermediated settlement (“i.e., the use of a third party to mitigate settlement risk”) was not meant, from a public policy standpoint, to eviscerate patentability of inventions in the utilitarian, real-world fields of medical imaging and seismic imaging; where one can help save lives and the other can help to extract resources to meet our energy needs. Further, a 35 U.S. C. 101 “standard” that leans toward inclusion of pre- and/or post-solution activities (e.g., often multiple actor claims) would similarly be contrary to public policy.

(Reply 3.)

In summary, Bø urges that *Alice* “does not substantially change 35 U.S.C. § 101” (Br. 15.) The majority of Bø’s arguments focus on comparisons with claim 6 of the application for patent at issue in *Abele*,⁹ in which the prior collection of X-ray attenuation data produced by a computed tomographic scanner was held to be part of the claimed process, and to control patent eligibility over the process steps of the algorithm *per se*. Bø also points to definitions from the Schlumberger Oilfield Glossary¹⁰ of the terms “seismic” (waves of elastic energy in the earth) and

⁸ Reply Brief filed 1 April 2016 (“Reply”).

⁹ *In re Abele*, 684 F.2d 902 (Fed. Cir. 1982) (abrogated by *In re Bilski*, 545 F.3d 943, 959 n.17 (Fed. Cir. 2008).

¹⁰ The Schlumberger Oilfield Glossary is available on line at <http://www.glossary.oilfield.slb.com/>.

“attribute” (a measurable property of seismic data) (*id.* at 10–11)¹¹. These recitations in the claims, in Bø’s view, go further (are more physically tangible, and are more tied to the physics of the real world, and produce a result) than claim 1 of the patent¹² at issue in *Research Corp. Tech.*¹³ (Br. 14–16.)

We disagree that *Alice* does not apply in determining whether the subject matter of claim 1 is judicially-excepted from patent-eligibility. Even a cursory reading of *Alice* belies Bø’s attempt to confine to fundamental economic practices the general two-step framework for determining whether claims are drawn to patent-eligible subject matter. Indeed, the Court discusses how all of the modern-era cases relevant to the resolution of abstract ideas and patentable subject matter fit into the two-step analytical framework. *Alice*, 134 S. Ct. at 2357–60 (part IIIB).

¹¹ It is not clear that the definitions of these terms were introduced during prosecution before the Examiner, when they would have provided the most opportunity for fruitful discussion. Our rules prohibit new evidence introduced on appeal 37 C.F.R. § 41.37(c)(2) (2015) (“A brief shall not include . . . any new or non-admitted affidavit or other Evidence [except in circumstances not relevant here].”). However, the Schlumberger Oilfield Glossary is a technical dictionary, and thus can be consulted at any time. 37 C.F.R. § 41.30 (2015) (“Evidence does not include dictionaries, which may be cited before the Board.”); *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1584 n.6, 39 USPQ2d 1573, 1578 n.6 (Fed. Cir. 1996) (“[T]echnical treatises and dictionaries . . . are worthy of special note. Judges are free to consult such resources at any time . . . and may also rely on dictionary definitions when construing claim terms . . .”).

¹² Kevin J. Parker & Theophano Misa, *Method and apparatus for halftone rendering of a gray scale image using a blue noise mask*, U.S. Patent No. 5,111,310 (1992).

¹³ *Research Corp. Tech. v. Microsoft Corp.*, 627 F.3d 859 (Fed. Cir. 2010).

Claims to “any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof” (35 U.S.C. § 101) are statutory but may nevertheless be patent-ineligible if they are directed to one of the judicially recognized exceptions—laws of nature, natural phenomena, and (most commonly) abstract ideas—without adding anything significantly more. These exceptions have been described as “the basic tools of scientific and technological work.” *Mayo*, 566 U.S. at 71. “[I]n applying the § 101 exception, we must distinguish between patents that claim the building blocks of human ingenuity and those that integrate the building blocks into something more, thereby transforming them into a patent-eligible invention.” *Alice*, 134 S. Ct. at 2354 (internal quotes, alterations, and citations omitted). The Court explained that there is a “concern that patent law not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity.” *Id.* at 2354.¹⁴

Thus, the two-stage test provides a framework for distinguishing between claims to the building blocks of human ingenuity and those that integrate the building blocks into a patent-eligible application. In step one, we must determine whether claims at issue are directed to abstract ideas. (*Id.* at 2356–57 (part IIIA)). “If so, we then ask [in step two], what else is there in the claims before us?” considering “the elements of the claims both individually and as an ordered combination to determine whether the

¹⁴ *Citing Mayo*, 132 S. Ct. at 1301 (*citing O’Reilly v. Morse*, 15 How. 62, 112, 113 (1854)).

additional elements transform the nature of the claim into a patent eligible application.” *Id.* at 2355 (internal quotes omitted).

To determine whether a claim is directed to an abstract idea under step one of the framework, we must first determine what the claim is “directed to.” Once that is characterized, a determination is made as to whether that which the claim is directed to is an abstract idea.

The “directed to” inquiry . . . cannot simply ask whether the claims *involve* a patent-ineligible concept, because essentially every routinely patent-eligible claim involving physical products and actions *involves* a law of nature and/or natural phenomenon—after all, they take place in the physical world. *See Mayo*, 132 S. Ct. at 1293 (“For all inventions at some level embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.”). Rather, the “directed to” inquiry applies a stage-one filter to claims, considered in light of the specification, based on 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); *see Genetic Techs. Ltd. v. Merial L.L.C.*, 2016 WL 1393573, at *5 [818 F.3d 1369, 1375] (Fed. Cir. 2016) (inquiring into “the focus of the claimed advance over the prior art”).

Enfish, LLC v. Microsoft Corp., 822 F.3d 1327, 1335 (Fed. Cir. 2016).

In this regard, claim 1 comprises the steps of *identifying* seismic data values, *calculating* a statistical significance statistic (“SSS”), *interpolating* a P-value related to the SSS, *determining* a significant P-value¹⁵, and *storing* a seismic attribute value.¹⁶ This is the focus of the claimed advance.

(Compare the description of the prior art calculation of line integrals

¹⁵ i.e., a minimum P-value that provides a maximum negative log(P(SSS)).

¹⁶ that is based at least in part on the determining a significant P-value.

(Spec. 1 [0002]) with the description of the use of statistical tests (*id.* at 6 [0025]), summarized *supra* at pages 1–2).

We now turn to the question of whether “a series of statistical steps for the purpose of identifying objects within seismic data in a geologic environment” to which the claim 1 is ‘directed’ is a patent-ineligible abstract idea. To assist in that determination, we look to other cases. *Amdocs (Israel) Limited v. Openet Telecom, Inc.* 841 F.3d 1288, 1294 (Fed. Cir. 2016), *cert. denied*, *Openet Telecom, Inc. v. Amdocs (Israel) Ltd.*, 138 S. Ct. 469, 470 (U.S. 2017) (“Instead of a definition [of what an abstract idea encompasses], then, 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.”); *Enfish v. Microsoft*, 822 F.3d at 1334:

The Supreme Court has not established a definitive rule to determine what constitutes an ‘abstract idea’ sufficient to satisfy the first step of the *Mayo/Alice* inquiry. . . . Rather, both this court and the Supreme Court have found it sufficient to compare claims at issue to those claims already found to be directed to an abstract idea in previous cases.”

Electric Power Group is almost exactly on point, and it is instructive to quote extensively from the step-one analysis, omitting the case citations.

The claims in this case fall into a familiar class of claims “directed to” a patent-ineligible concept. The focus of the asserted claims, as illustrated by claim [1] quoted above, is on collecting information, analyzing it, and displaying certain results of the collection and analysis.

Information as such is an intangible. . . . Accordingly, we have treated collecting information, including when limited to particular content (which does not change its character as information), as within the realm of abstract

ideas. . . . 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. . . . And we have recognized that merely presenting the results of abstract processes of collecting and analyzing information, without more (such as identifying a particular tool for presentation), is abstract as an ancillary part of such collection and analysis.

. . .

Here, the claims are clearly focused on the combination of those abstract-idea processes. The advance they purport to make is a process of gathering and analyzing information of a specified content, then displaying the results, and not any particular assertedly inventive technology for performing those functions. *They are therefore directed to an abstract idea.*

Electric Power Group, 830 F.3d 1353–54 (emphasis added) (citations omitted).

“The ‘abstract idea’ step of the inquiry calls upon us to 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 Texas v. DirectTV, LLC*, 838 F.3d 1253, 1257 (Fed. Cir. 2016) (quoting *Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016)); see also *Enfish v. Microsoft*, 822 F.3d at 1335, quoted in *Apple, Inc. v. Ameranth, Inc.*, 842 F.3d 1229, 1241 (Fed. Cir. 2016).

In the present case, given the focus of the claims as a whole on steps of identifying seismic data values, calculating a statistical significance statistic (“SSS”), interpolating a P-value related to the SSS, determining a significant P-value, and storing a seismic attribute value, and that these steps are consistent with the focus of the advance over the prior art discussed in

the Specification, the steps are the heart of the invention. Thus, we find that the Examiner properly characterized claim 1 as being “directed to” “a series of statistical steps for the purpose of identifying objects within seismic data in a geologic environment” (FR 4).

We therefore conclude for step 1, as did the Examiner, that representative claim 1 is directed to an abstract idea.

We now turn to step 2 of the *Alice* framework, in which we 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.” *Alice*, 134 S. Ct. at 2355, internal quotes, brackets, and citation omitted.

Bø directs our attention to the seismic data that is processed and the seismic attribute value that is calculated as making the process physically tangible, tying the claimed process to the physical world and producing a result. (Br. 14–16.) The Examiner reasons that “[a]dding language to what the data may represent (e.g. geologic environment, seismic value) is merely a general tie to a technology or technological field.” (FR 4, ll. 9–11.) Precedent supports the conclusion that more than a recitation of a field of use is required to transform the claims from covering a set of abstract ideas to a patentable application of those abstract ideas. *See, e.g., SAP America, Inc. v. Investpic, LLC*, 890 F.3d 1016, 1022 (Fed. Cir. 2018):

Contrary to InvestPic’s suggestion, it does not matter to this conclusion whether the information here is information about real investments. As many cases make clear, even if a process of collecting and analyzing information is “limited to particular content” or a particular “source,” that limitation does not make the collection and analysis other than abstract.

(quoting *Electric Power Group*, 830 F.3d at 1355 (citing cases)). Moreover, “[c]laim limitations directed to the content of information and lacking a requisite functional relationship are not entitled to patentable weight because such information is not patent eligible subject matter under 35 U.S.C. § 101.” *Praxair Distribution, Inc. v. Mallinckrodt Hospital Products IP Ltd.*, 890 F.3d 1024, 1032 (Fed. Cir. 2018).

As the Court in *Alice* emphasized, it explained in *Bilski*¹⁷ that “*Flook*^[18] stands for the proposition that the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment.” *Alice*, 134 S. Ct. at 2355, quoting *Bilski*, 561 U.S. at 610–611. Without more, the mere recitation of the origin of the data as the sensing and recording of a seismic event does not “add significantly” to the inventive concept.¹⁹ See also *Electric Power Group*, 830 F.3d at 1355 (Fed. Cir. 2016):

Most obviously, limiting the claims to the particular technological environment of power-grid monitoring is, without more, insufficient to transform them into patent-eligible applications of the abstract idea at their core. . . . More particularly, a large portion of the lengthy claims is devoted to enumerating types of information and information sources available within the power-grid environment. But merely selecting information, by content or source, for collection, analysis, and display does nothing significant to differentiate a process from ordinary mental processes, whose implicit exclusion from § 101 undergirds the information-based category of abstract ideas.

¹⁷ *Bilski v. Kappos*, 561 U.S. 593, 130 S. Ct. 3218 (2010).

¹⁸ *Parker v. Flook*, 437 U.S. 584 (1978).

¹⁹ Bø’s reliance on *Abele* is directly contrary to instruction of the Federal Circuit that “those portions relying solely on the *Freeman-Walter-Abele* test should no long be relied on.” *Bilski*, 545 F.3d 943, 959 n.17.

As for the final “storing” step, the Examiner states that “[t]he new limitation of ‘storing’ is considered routine, used by those of ordinary skill in the art.” (FR 4, ll. 11–12.) Be that as it may, “storing,” using generic physical components, has itself been held to be an abstract idea. *See In re TLI Communications LLC Patent Litigation*, 823 F.3d 607, 611 (2016) (“the abstract idea of classifying and storing digital images in an organized manner.”). Storing data,²⁰ as the Court has recognized on numerous occasions, “amounts to electronic recordkeeping—one of the most basic functions of a computer. *See, e.g., [Gottschalk v.] Benson*, 409 U.S. [63], at 65, . . . (noting that a computer ‘operates . . . upon both new and previously stored data.’)” *Alice*, 134 S. Ct. at 2359. Thus, the Court held, this aspect of the claim did not contribute “substantially more than the ineligible concept itself.” *Id.* at 2355.

It also notable that claim 1 calls for “processing seismic data” via “identifying,” “calculating,” “interpolating,” “determining,” and “storing” steps that are not attached to any device. But even if claim 1 were read to suggest employing a device, such as a system comprising a processor, a memory, and a storage medium, as independent claim 15 requires, the intrinsic evidence in the record before us suggests that the use of conventional devices is contemplated. (*See, e.g., Spec. 13 [0046]*, “computer system 1000 may be a conventional desktop or a server computer”.) Adding conventional devices as a conduit for the abstract idea of performing “series of statistical steps for the purpose of identifying

²⁰ Bø’s reliance of *RCT* is inapposite, given that the method claim in *RCT* does produce an image—it transforms matter—unlike the mere storage of data.

objects within seismic data in a geologic environment” (FR 4) does not add anything significantly more to transform said abstract idea into a patent-eligible inventive concept. *Cf. Alice* (“In light of the foregoing. . . , the relevant question is whether the claims here do more than simply instruct the practitioner to implement the abstract idea of intermediated settlement on a generic computer. They do not.”) *Also see, Credit Acceptance Corp. v. Westlake Services, LLC*, 859 F.3d 1044, 1057 (Fed. Cir. 2017):

Significantly, the claims do not provide details as to any non-conventional software for enhancing the financing process. *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, 850 F.3d 1332, 1342 (Fed. Cir. 2017) (explaining that “[o]ur law demands more” than claim language that “provides only a result-oriented solution, with insufficient detail for how a computer accomplishes it”); *Elec. Power Grp.*, 830 F.3d at 1354 (explaining that claims are directed to an abstract idea where they do not recite “any particular assertedly inventive technology for performing [conventional] functions.”).

For the foregoing reasons, Bø’s arguments are unpersuasive as to error in the Examiner’s determination under the *Alice* two-step analytical framework that the claims are judicially-excepted from patent-ineligibility.

We have considered all of the Bø’s remaining arguments and have found them unpersuasive. Accordingly, because representative claim 1, and claims 2–20, which stand or fall with claim 1, are directed to an abstract idea and do not present an “inventive concept,” we sustain the Examiner’s determination that they are directed to ineligible subject matter under 35 U.S.C. § 101. *Cf. LendingTree, LLC v. Zillow, Inc.*, 656 Fed. Appx. 991, 997 (Fed. Cir. 2016) (“We have considered all of LendingTree’s remaining arguments and have found them unpersuasive. Accordingly, because the

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asserted claims of the patents in suit are directed to an abstract idea and do not present an “inventive concept,” we hold that they are directed to ineligible subject matter under 35 U.S.C. § 101.”).

C. Order

It is ORDERED that the rejection of claims 1–20 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).

AFFIRMED