UNITED STATES PATENT AND TRADEMARK OFFICE

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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 VITALY L. GALINSKY

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Appeal 2017-003296
Application 13/543,663[1]
Technology Center 1600

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Before ERIC B. GRIMES, JOHN E. SCHNEIDER, and
RACHEL H. TOWNSEND, *Administrative Patent Judges*.

TOWNSEND, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to a method
of rapidly assessing similarity between genomic sequences, which have been
rejected as being directed to patent ineligible subject matter. We have
jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

"Searching databases for sequences similar to a given sequence is
probably one of the most fundamental and important tools for predicting
structural variations and functional properties in the modern biology."
(Spec. 1.) "The rapidly increasing amounts of genetic sequence information

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[1] Appellant identifies himself as the real party in interest. (Br. 2.)

available represent a constant challenge to developers of hardware and software database searching and handling." (*Id.*) "[T]he invention relates to a method . . . for rapid screening of local sequence similarity." (*Id.*)

Claims 1–17, 19, and 21–26[2] are on appeal. Claim 1 is representative and reads as follows:

> 1. A method of rapidly assessing similarity between genomic sequences comprising:
>
> building indices for reference sequence;
>
> recording all local hits between a reference index and a query sequence in a first local hit table;
>
> building a second local hit table;
>
> filling from the leftmost part of the query into the local hit tables;
>
> simultaneously filling from the rightmost part of the query into the local hit tables; identifying a single significant alignment of an entry from either the first local hit table or the second local hit table; and
>
> terminating the filling of the first local hit table and terminating the filling of the second local hit table in response of the identifying a single significant alignment;

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[2] Claims 18 and 20 were cancelled by Applicant in a response filed June 16, 2015. Appellant purports to have withdrawn claims 19 and 21. (Br. 2.) In the Final Action, the Examiner noted the Applicant's inappropriate unilateral withdrawal of these claims from consideration in the June 16, 2015 paper. The Examiner noted claims 19 and 21 are still pending and rejected those claims along with claims 1–17 and 22–26 under 35 U.S.C. § 101. As Appellant has not cancelled claims 19 and 21, they are still pending and have been finally rejected by the Examiner. Thus, these claims are also considered to be on appeal.

> identifying candidate entries in said local hit table for
final alignment of said query to said reference; and

> reporting assessing results.

(Br. 8.)

The following ground of rejection by the Examiner is before us on review:

Claims 1–17, 19 and 21–26 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

DISCUSSION

The Examiner finds that claim 1 is directed to an abstract idea of determining similarity between genomic sequences by indexing a reference sequence and aligning a query sequence to the reference sequence using a local hit table. (Final Action 3.) The Examiner notes that the asserted improvement to the technology of sequence alignment that is claimed is directed to a judicial exception, i.e., the indexing of the reference sequence in a particular way and the aligning of the query sequence to the reference sequence using a local hit table, "which is similar to the abstract idea of comparing information of a sample or test subject to a control or target data at issue in [*In re BRCA1- & BRCA2- Based Hereditary Cancer Test Patent Litigation*], 774 F.3d 755, 113 USPQ 2d 1241 (Fed[.] Cir. 2014))." (Ans. 2.) The Examiner concludes that the claim "do[es] not include additional elements that are sufficient to amount to significantly more than the judicial exception." (Final Action 3; Ans. 2, 4.)

We agree with the Examiner's factual findings and conclusion that claim 1 is directed to patent ineligible subject matter.

Section 101 provides that "[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." 35 U.S.C. § 101. In *Alice*, the Supreme Court articulated a two-step test for examining patent eligibility under § 101. *Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S. Ct. 2347 (2014). Step one involves determining whether the claims at issue are directed to a patent ineligible concept, and step two, reached only if the determination in step one is yes, considers the elements of each claim both individually and "'as an ordered combination'" to determine whether additional elements "'transform the nature of the claim'" into a patent eligible application. *Id.* at 2355.

"The Supreme Court has not 'delimit[ed] the precise contours of the 'abstract ideas' category.'" *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343, 1346 (Fed. Cir. 2014) (quoting *Alice*, 134 S. Ct. at 2357). However, our reviewing Court has held "[i]nformation as such is an intangible" and thus, has "treated collecting information, including when limited to particular content (which does not change its character as information), as within the realm of abstract ideas." *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1353 (Fed. Cir. 2016) (collecting cases); *see also SAP America, Inc. v. InvestPic LLC*, 898 F.3d 1161, 1162 (Fed. Cir. 2018). Likewise it has "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." *Elec. Power Grp.*, 830 F.3d at 1354 (collecting cases). Claim 1 is directed at abstract ideas under those principles. The focus of the claim is on selecting certain information, using mathematical

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techniques to analyze it (using particular arrays and comparing the data), and identifying a particular result of the analysis. That is all abstract. *See SAP*, 898 F.3d at 1167–68 (noting that claims to an improvement in a mathematical technique with no improved display mechanism were abstract as compared to those in *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299 (Fed. Cir. 2016) which included a "claimed improvement . . . [as] to how the physical display operated (to produce better quality images)" in addition to having "specificity required to transform a claim from one claiming only a result to one claiming a way of achieving it").

The claimed method does not improve computer technologies as such, *see, e.g.*, *McRO*, 837 F.3d at 1313 (claims reciting rules that improve how a physical display operated through computer automation to produce "'accurate and realistic lip synchronization and facial expressions in animated characters'"), *Finjan, Inc. v. Blue Coat Systems, Inc.*, 879 F.3d 1299, 1305 (Fed. Cir. 2018) (claims were directed to employing a new kind of file that enables a computer security system to do things it could not do before), or recite steps or rules that solve a technological problem in the use of computers in a particular way, *see, e.g.*, *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327, 1335–36 (Fed. Cir. 2016) (claims recite employing a particular database technique to improve how computers carry out storage and retrieval of data, i.e., a software method that improves the way the computers themselves operate); *Bascom Glob. Internet Servs., Inc. v. AT&T Mobility LLC*, 827 F.3d 1341, 1348–49 (Fed. Cir. 2016) (inventive concept in the non-conventional and non-generic arrangement of known, conventional pieces, including installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features

specific to each end user, giving "the filtering tool both the benefits of a filter on a local computer and the benefits of a filter on the ISP server"). While the claim does not recite the use of a computer, we note that the Specification describes the methodology as being performed on a computer and that the data structures created that represent the reference sequence and the hit table are employed in the bioinformatics analysis on an electronic device. (*See, e.g.,* Spec. 1, 4, 11.)

While the rules implicit in building the indices recited in the claim and the manner of comparing the data speeds up the sequencing analysis, our reviewing court has held that speed and accuracy increases stemming from the ordinary capabilities of a general purpose computer "do[] not materially alter the patent eligibility of the claimed subject matter." *Bancorp Servs., L.L.C. v. Sun Life Assurance Co. of Canada*, 687 F.3d 1266, 1278 (Fed. Cir. 2012). Appellant does not argue, nor does the Specification indicate that the rules improve how a physical element of the computer system operates, enable the computer system to do things it could not do before, or provide for a software method that improves the way the computers themselves operate.

Appellant asserts that the claimed invention is "a process for solving technical problems in the technical field of biotechnology." (Br. 3.) We disagree that the claimed invention solves a technical problem of the type that is patent-eligible. While the claim may be directed to an improvement in the processing of information, e.g., providing "a less computationally intensive method for sequence matching" (Br. 5) (emphasis omitted), collecting and processing information without more is within the realm of abstract ideas, as explained above.

As to Appellant's argument that the claim is limited to a particular field in which to apply the algorithm, i.e., "assessing similarity between genomic sequences" (Br. 4) (emphasis omitted), we note that "merely limiting the field of use of the abstract idea to a particular . . . environment does not render the claims any less abstract." *Affinity Labs of Tex., LLC v. DIRECTV, LLC*, 838 F.3d 1253, 1259 (Fed. Cir. 2016).

> Without additional limitations, a process that employs mathematical algorithms to manipulate existing information to generate additional information is not patent eligible. "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." *Parker v. Flook*, 437 U.S. 584, 595 . . . (1978) (internal quotations omitted).

Digitech Image Techs., LLC v. Elecs. for Imaging, Inc., 758 F.3d 1344, 1351 (Fed. Cir. 2014). Indeed, "the absence of complete preemption does not demonstrate patent eligibility." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015). "Where a patent's claims are deemed only to disclose patent ineligible subject matter under the [two-step] framework, as they are in this case, preemption concerns are fully addressed and made moot." *Id.*; *see also Intellectual Ventures I LLC v. Symantec Corp.*, 838 F.3d 1307, 1321 (Fed. Cir. 2016) ("A narrow claim directed to an abstract idea, however, is not necessarily patent-eligible . . . ."); *OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1362–63 (Fed. Cir. 2015) ("[T]hat the claims do not preempt all [inventions in the field] or may be limited to [certain processes in the field] do[es] not make them any less abstract.").

Turning to *Alice* step-two, we agree with the Examiner that claim 1 does not recite additional elements beyond the abstract idea. (Final Action 4–5; Ans. 2.) The steps are simply collecting information and comparing it

in a particular way, which are abstract ideas. Appellant does not argue that claim 1 includes steps beyond a collection and comparison of data. An innovation that consists of using particular ineligible subject matter, such as collecting and comparing data to identify certain information, is insufficient to establish that the claims at issue are directed to a patent-eligible application of an abstract idea. *SAP*, 898 F.3d at 1163 ("an advance . . . [that] lies entirely in the realm of abstract ideas, with no plausibly alleged innovation in the non-abstract application realm . . . is ineligible for patenting"); *see also Synopsys, Inc. v. Mentor Graphics Corp.*, 839 F.3d 1138, 1152 (Fed. Cir. 2016) ("To the extent the Asserted Claims add anything to the abstract idea (i.e., translating a functional description of a logic circuit into a hardware component description of the logic circuit), it is the use of assignment conditions as an intermediate step in the translation process. . . . But, given that the claims are for a mental process, assignment conditions, which merely aid in mental translation as opposed to computer efficacy, are not an inventive concept that takes the Asserted Claims beyond their abstract idea.").

Moreover, even if the way in which the data is compiled were new, the compilation of data and its additional manipulation and storage in a particular way, which is the "heretofore" "not . . . developed" "writing alignment tool" (Br. 5) that provides for a less computationally intensive method for sequence matching (*see, e.g.*, Spec. 5–7), is still just a manipulation of information as such. "[A] claim for a *new* abstract idea is still an abstract idea." *Synopsys*, 839 F.3d at 1151. Similarly, a claim for a beneficial abstract idea is still an abstract idea. *See Ariosa*, 788 F.3d at 1379–80.

Consequently, for the reasons discussed above, we sustain the Examiner's rejection of claim 1 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

Claims 2–17, 19, and 21–26 have not been argued separately and therefore fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

SUMMARY

We affirm the rejection of claims 1–17, 19, and 21–26 under 35 U.S.C. § 101 as being directed to non-statutory subject matter.

TIME PERIOD FOR RESPONSE

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