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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
12/726,596	03/18/2010	Ran BIRON	82260107	1585

146568   7590   12/31/2019

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ART UNIT	PAPER NUMBER
2159	

NOTIFICATION DATE	DELIVERY MODE
12/31/2019	ELECTRONIC

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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 RAN BIRON, URI BEN-DOR,
and VADIM ARSHAVSKY[1]
_____

Appeal 2018-001951
Application 12/726,596
Technology Center 2100
_____

Before MICHAEL J. STRAUSS, AARON W. MOORE, and
PHILLIP A. BENNETT, *Administrative Patent Judges*.

MOORE, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] Hewlett Packard Enterprise Development, LP is the real party in interest.
(*See* Appeal Br. 3.) "Appellant" is the "applicant" of 37 C.F.R. § 1.42(a).

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from a Final Rejection of claims 5–11 and 21–36, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

THE INVENTION

The application is directed to "[s]ystems, methods, and other embodiments associated with graph transformation," one example of which is "transforming a base graph into a folded graph as a function of a folding query." (Abstract.) Claim 5, reproduced below, exemplifies the subject matter on appeal:

> 5. A non-transitory computer-readable medium storing computer-executable instructions that when executed by a computer cause the computer to perform a method, the method comprising:
>
> executing a base query on a stored graph to identify a base graph, where the stored graph resides in a configuration management database, where nodes in the stored graph represent elements of an information technology (IT) infrastructure, and where edges in the stored graph represent relationships between the elements of the IT infrastructure;
>
> generating a folding query based on a folding definition that describes a desired hierarchy of an output graph;
>
> transforming the base graph into a folded graph as a function of the folding query, where the folding query describes an edge to add to the folded graph when a pre-specified sub-graph is detected in the base graph; and
>
> providing the folded graph.

THE REJECTION

Claims 5–11 and 21–36 stand rejected under 35 U.S.C. § 101 "because the claimed invention is directed to a judicial exception (i.e., a law of nature, a natural phenomenon, or an abstract idea) without significantly more." (Final Act. 2.)

ANALYSIS

The Section 101 Framework

By statue, a patentable invention must be a "new and useful process, machine, manufacture, or composition of matter, or [a] new and useful improvement thereof." 35 U.S.C. § 101. The Supreme Court has identified implicit exceptions to patentability—laws of nature, natural phenomena, and abstract ideas, and, in *Alice Corp. v. CLS Bank Int'l*, 573 U.S. 208, 217 (2014), and *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 566 U.S. 66 (2012), provided a framework for identifying ineligible claims. The "*Mayo/Alice*" evaluation has two steps: (1) determining if a claim is directed to an ineligible concept, and, if so, (2) determining if one or more claim elements is sufficient make the claim "significantly more" than the ineligible concept itself. *See Alice*, 573 U.S. at 217–18.

The Patent Office has published Guidance for applying *Mayo/Alice*. *See USPTO's January 7, 2019 Memorandum, 2019 Revised Patent Subject Matter Eligibility Guidance*, 84 Fed. Reg. 50. The Guidance instructs us first to look at whether a claim recites a judicial exception, the broad categories of which are defined as mathematical concepts, certain methods

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of organizing human activity, and mental processes.[2] *See* 84 Fed. Reg. at 54 (Step 2A, Prong One).

If we find a judicial exception, we determine whether it is "integrated into a practical application" in the claim. *See* 84 Fed. Reg. at 54–55 (Step 2A, Prong Two); *see also* MPEP § 2106.05(a)–(c), (e)–(h) (non-exhaustively listing ways in which a practical application may be found). "Practical application" means that the claim includes "a meaningful limit on the judicial exception, such that the claim is more than a drafting effort designed to monopolize the judicial exception." 84 Fed. Reg. at 54. For example, a practical application may exist in an improvement in the functioning of a computer or other technology, a particular machine or manufacture integral to the claim, or transformation or reduction of an article to a different state or thing. *See id.* at 55. However, merely using a computer to perform an abstract idea, adding insignificant extra-solution activity, or only generally linking to a particular technological environment or field is not sufficient for a practical application. *See id.*

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[2] "Mathematical concepts" includes "mathematical relationships, mathematical formulas or equations, [and] mathematical calculations"; "Certain methods of organizing human activity" includes "fundamental economic principles or practices (including hedging, insurance, mitigating risk); commercial or legal interactions (including agreements in the form of contracts; legal obligations; advertising, marketing or sales activities or behaviors; business relations); managing personal behavior or relationships or interactions between people (including social activities, teaching, and following rules or instructions)"; "Mental processes" includes "concepts performed in the human mind (including an observation, evaluation, judgment, opinion)." 84 Fed. Reg. at 52.

If a claim *recites* a judicial exception not integrated into a practical application, it is *directed to* an abstract idea. In that case, we further look at whether the claim "adds a specific limitation" beyond the judicial exception that is not "well-understood, routine, conventional." *See* 84 Fed. Reg. at 56 (Step 2B); *see also* MPEP § 2106.05(d). In the absence of such an addition, a claim that has reached this stage of the analysis is ineligible.

Abstract Idea[3]

Claim 5 recites a computer-readable medium with instructions for causing a computer to "execut[e] a base query on a stored graph to identify a base graph," "generat[e] a folding query based on a folding definition that describes a desired hierarchy of an output graph"; "transform[] the base graph into a folded graph as a function of the folding query, where the folding query describes an edge to add to the folded graph when a pre-specified sub-graph is detected in the base graph"; and "provid[e] the folded graph." The claim further recites that "the stored graph resides in a configuration management database," the nodes of the graph "represent elements of an information technology (IT) infrastructure," and the edges of the graph "represent relationships between the elements of the IT infrastructure."

The Examiner found the claims "directed to the abstract idea of manipulating a mathematical object (a graph) based upon a definition that describes a desired result" and that the claims "do not include additional elements that are sufficient to amount to significantly more than the judicial

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[3] Following the lead of the Examiner and Appellant, we address subject matter eligibility in the context of claim 5. *See* 37 C.F.R. § 41.37(c)(1)(iv).

exception because the additional computer elements, which are recited at a high level of generality, provide conventional computer functions that do not add meaningful limits to practicing the abstract idea." (Final Act. 2.) The Examiner further found that the claims do "not include additional elements that are sufficient to amount to significantly more than the judicial exception because the additional elements when considered both individually and as an ordered combination do not amount to significantly more than the abstract idea." (*Id.* at 4.)

We agree with the Examiner that "executing a base query," "generating a folding query," "transforming the base graph into a folded graph as a function of the folding query, and "providing the folded graph" constitute a technique for "manipulating a mathematical object"—the graph—"through mathematical operations" and describe a "mathematical algorithm." (Final Act. 3.) We thus also agree with the Examiner that the claims recite an abstract idea. *See* 84 Fed. Reg. at 52.

Appellant argues the claims are not abstract because "they are necessarily rooted in (and inextricably tied to) computer technology in order to overcome a problem specifically arising in the realm of configuration management." (Appeal Br. 10.) We are not persuaded. The claims are directed an algorithmic technique for manipulating and displaying data stored in a database. Although the claims do include computer components, those recitations are entirely generic ("non-transitory computer-readable medium storing computer-executable instructions that when executed by a computer") and, thus, not sufficient to make the claims non-abstract.[4] *See,*

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[4] *See* Spec. ¶¶ 47–62 (describing generic computer hardware).

e.g., Two-Way Media Ltd. v. Comcast Cable Communications, LLC, 874
F.3d 1329, 1337 (Fed. Cir. 2017) ("Claims directed to generalized steps to
be performed on a computer using conventional computer activity are not
patent eligible.").

Appellant also argues that "the claimed invention may provide a
number of technical benefits in the field of configuration management of IT
infrastructure" in that (1) "[i]t may allow transformation of the graph into a
form that is more approachable," (2) "[b]ecause the folded graph is
generated using a query, the query may be executable by the same query
engine that generated the base graph, therefore eliminating intermediary
servers, reducing the maintenance and server cost of searching a graph," and
(3) "if the folding query is generated based on a data structure that resembles
the format that the user would like data presented in, the user can easily
construct the data structure using a graphical user interface without having to
learn complex rules." (Appeal Br. 11.) This argument is not persuasive
because the alleged benefits are not tied to the claim language, and because
they are argued only to be benefits that "*may*" result from the invention.
Further, the first and third alleged advantages are matters of convenience
("more approachable," "easily"), and reciting the use of a computer for
reasons of convenience or speed does not make otherwise ineligible subject
matter eligible. *See, e.g., LendingTree, LLC v. Zillow, Inc.*, 656 F. App'x
991, 997 (Fed. Cir. 2016) (holding ineligible claims to a computerized
method of speeding up a loan-application process); *Intellectual Ventures I
LLC v. Capital One Bank (USA)*, 792 F.3d 1363, 1370 (Fed. Cir. 2015)
("[M]erely adding computer functionality to increase the speed or efficiency
. . . does not confer patent eligibility on an otherwise abstract idea.").

Citing *Enfish, LLC v. Microsoft Corp.*, 822 F.3d 1327 (Fed. Cir. 2016), Appellant additionally argues that "the present claims are directed to generating an improved data structure that improves the way a computer stores, generates, and retrieves data structures in a configuration management database, which as discussed earlier is a specific type of database technology used to enhance operation of computer and IT systems." (Appeal Br. 12.) We do not agree that these claims are like those in *Enfish*, which were eligible because they recited a "self-referential table" that was "a specific type of data structure designed to improve the way a computer stores and retrieves data in memory." *Enfish*, 822 F.3d. at 1339. Appellant's process does not "improve the way a computer stores and retrieves data in memory" or otherwise improve how the computer *itself* operates; instead, it uses generic computer programming techniques[5] to implement a system for managing IT assets. Appellant does not claim a new base graph, or a new way of storing a base graph, that might correspond to *Enfish's* "self-referential table."

Appellant also cites *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299 (Fed. Cir. 2016), arguing that the instant claims "recite a number of unconventional steps representing a specific way of enhancing operation of a configuration database and a computer system involved in configuration management." (Appeal Br. 13.) The claimed method in *McRo* "allow[ed] computers to produce 'accurate and realistic lip synchronization and facial expressions in animated characters' that

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[5] *See* Spec. ¶ 46 (explaining only that "the graph transformation logic 630 may be implemented in hardware, instructions stored in a memory or in execution, firmware, and/or combinations thereof").

previously could only be produced by human animators," providing "an improved technological result in conventional industry practice." *Id*. at 1313, 1316. Appellant's claims, however, describe a method for improving a business process (IT management), not "an improved *technological* result."

To accept Appellant's attempt to analogize the instant claims to the *Enfish* and *McRo* claims would be to find that virtually any method implemented on a computer is eligible, a position that cannot be squared with either *Alice* itself or the subsequent Federal Circuit case law.

Because we agree with the Examiner that the claims recite an abstract idea, we proceed to Prong Two of Step 2A to determine if the idea is integrated into a practical application, in which case the claims as a whole would not be directed to merely an abstract idea.

Practical Application

As noted, the "practical application" inquiry looks at whether a claim includes "a meaningful limit on the judicial exception," to ensure that "the claim is more than a drafting effort designed to monopolize the judicial exception." 84 Fed. Reg. at 54. In this case, we have a computer-readable medium with instructions for causing a computer to execute a query. The claim thus recites a method that "merely uses a computer as a tool to perform an abstract idea," *id.* at 55, and, therefore, lacks integration into a practical application. We do not find "an improvement in the functioning of a computer or other technology," because the generic processor is used for its ordinary purpose. We do not find "a particular machine or manufacture integral to the claim," because a general purpose processor is not enough.

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And we do not find "transformation or reduction of an article to a different state or thing," because only intangible data is changed or manipulated.

Because we conclude that claim 5 lacks additional elements that would allow us to find a practical application, we agree with the Examiner that the claim is directed to an abstract idea and move to Step 2B.

Inventive Step

"It is possible that a claim that does not 'integrate' a recited judicial exception is nonetheless patent eligible" as, "[f]or example the claim may recite additional elements that render the claim patent eligible even though a judicial exception is recited in a separate claim element." 84 Fed. Reg. at 56. We need not reconsider the issues addressed in Step 2A, but do weigh whether the claim "[a]dds a specific limitation or combination of limitations that are not well-understood, routine, conventional activity in the field, which is indicative that an inventive concept may be present." *Id.* at 56.

Claim 5 is directed to an abstract idea of performing a query using a processor. The claim recites a specific way of manipulating and retrieving data that may have been new in the field. Collecting, modifying, filtering, sorting data in general were well known, however, such that any innovation in the claim is limited to using the particular kind of data and filtering and sorting it in the particular way, which are part of the abstract idea. We thus conclude that the claims do not include additional elements that evidence an inventive concept imparting patent eligibility. *Cf. Parker v. Flook*, 437 U.S. 584, 585–86 (1978) (holding claims ineligible because "[t]he only difference between the conventional methods . . . and that described in respondent's application rests in . . . the mathematical algorithm or formula").

Although Appellant argues "the Examiner has not properly considered the ordered combination of elements of claim 5, as required by the Federal Circuit's guidance," Appellant's argument merely paraphrases the claim (*see* Reply Br. 6), failing to explain *why* the claimed steps reflect a combination that provides an inventive step. We find that, viewed as a whole, claim 5 simply describes the use of a generic computer to implement the abstract idea in a particular environment, and, therefore, do not agree with Appellant that "the subject matter of claim 5 is directed to improving the relevant technology and computer functionality." (*Id.* at 6–7.)

Appellant argues "the claims include meaningful limitations linking the use of the abstract idea to the particular technological environment of configuration management of IT infrastructure." (Appeal Br. 14.) We do not agree. The only limitations that link the use of the idea to "the particular technological environment of configuration management of IT infrastructure" are the recitations regarding the content of the database, which are insufficient to change the abstract character of the claims. *See Diamond v. Diehr*, 450 U.S. 175, 193 (1981) ("A mathematical formula does not suddenly become patentable subject matter simply by having the applicant acquiesce to limiting the reach of the patent for the formula to a particular technological use."); *cf. Electric Power Group, LLC v. Alstom S.A.*, 830 F.3d 1350, 1354 (Fed. Cir. 2016) ("[L]imiting 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."); *Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1334 (Fed. Cir. 2012) ("The notion of using a clearinghouse generally and

using a clearinghouse specifically to apply for car loans . . . is of no consequence without more.").

Appellant also argues that the claims "do not have a preemptive effect." (Appeal Br. 14.) This is unpersuasive because although preemption "may signal patent ineligible subject matter, the absence of complete preemption does not demonstrate patent eligibility." *Ariosa Diagnostics, Inc. v. Sequenom, Inc.*, 788 F.3d 1371, 1379 (Fed. Cir. 2015).

Appellant additionally argues "a claim that improves the functioning of a computer is considered to transform the claim process into a patent-eligible application" and list the alleged "technical benefits in the field of configuration management of IT infrastructure" identified above. (Appeal Br. 14–15.) This is not persuasive because, again, the claimed subject matter does not "improve the functioning of a computer." Instead, it allows a *generic* computer to be used in a way that may improve the management of IT infrastructure. As noted, however, the use a computer for speed or convenience does not give rise to patent eligibility. *See, e.g., Intellectual Ventures I*, 792 F.3d at 1370; *LendingTree*, 656 F. App'x at 997.

In the Reply, Appellant argues that claim 5 is like the claim approved as eligible in *Bascom Global Internet Services, Inc. v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016). (*See* Reply Br. 12–13.) We do not see the similarity. In *Bascom*, the inventive concept was "the installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features specific to each end user." *Id*. at 1350. Appellant's claims do not include structural or architectural limitations analogous to those that made the *Bascom* claims patent eligible.

Finally, Appellant argues that "the claims improve a technological field and [are] inextricably tied to computer technology." (Appeal Br. 15.) As we found above in connection with step 1, however, the claims recite a method implemented on a generic computer and, thus, do not reflect a technological improvement.

Eligibility Conclusion

The claims recite an abstract idea, have not been shown to be integrated into a practical application, and do not include additional recitations that make them significantly more than the underlying abstract idea. The Examiner's rejection of claims 5–11 and 21–36 under 35 U.S.C. § 101 is, therefore, sustained.

DECISION

The rejection of claims 5–11 and 21–36 under 35 U.S.C. § 101 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)(1)(iv).

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Basis	Affirmed	Reversed
5–11, 21–36	101		5–11, 21–36	
Overall Outcome			5–11, 21–36	

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)(1). See 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED