UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/761,256	02/07/2013	Georges-Henri Moll	GB920120032US1	7657

11445   7590   06/09/2020

IBM Corporation - Endicott Drafting Center
1701 North Street
Building 256-3
Endicott, NY 13760

EXAMINER
GOFMAN, ALEX N

ART UNIT	PAPER NUMBER
2163	

NOTIFICATION DATE	DELIVERY MODE
06/09/2020	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

edciplaw@us.ibm.com

PTOL-90A (Rev. 04/07)

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GEORGES-HENRI MOLL and PHILIPPE REFALO

Appeal 2019-001431
Application 13/761,256
Technology Center 2100

Before ERIC S. FRAHM, JUSTIN BUSCH, and MICHAEL T. CYGAN, *Administrative Patent Judges.*

CYGAN, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–7, 9–17, and 19, which are all of the pending claims in the application. Appeal Br. 1, 4. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

CLAIMED SUBJECT MATTER

The claimed invention generally relates to

Independent claim 1 is illustrative:

1.   A method of processing instruction code to solve a problem, comprising:

identifying a first relational data table operating using a relational logical operation on a second relational data table in the instruction code, the relational logical operation comprising at least multiplication;

selecting one or more sets of decision variables from identified tables and operation;

constructing one or more equivalent sets of serialized instructions comprising serial logical operations equivalent to the relational logical operation operating on one or more of the identified sets of decision variables; and

reducing computer processing time required by a computer processor to determine a solution to the problem by processing, using the computer processor, the equivalent sets of serialized instructions instead of the relational logical operation.

Appeal Br. 11 (Claims App.).

Independent claims 11 and 19 recite, respectively, a computer system and a computer-readable medium that perform the method of claim 1. Appeal Br. 13–14. Dependent claims 2–7, 9, 10, 12–17, and 18 each incorporate the limitations of their respective independent claims. *Id.* at 11–14.

REFERENCES

Name	Reference	Date
Boswell et al. (Boswell)	US 6,862,506 B2	Mar. 1, 2005
Graefe et al. (Graefe)	US 2007/0130110 A1	June 7, 2007
Kneisel et al. (Kneisel)	US 2012/0151437 A1	June 14, 2012

REJECTIONS

Claims 1–7, 9–17, and 19 are rejected under 35 U.S.C. § 101 as being ineligible subject matter.

Claims 1–7, 11–17, and 19 are rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Graefe and Kneisel.

Claims 9 and 10 are rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Graefe, Kneisel, and Boswell.

OPINION

A. Subject Matter Eligibility

1. Principles of Law

Patent-eligible subject matter is defined in 35 U.S.C. § 101 of the Patent Act, which recites:

> Whoever 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, subject to the conditions and requirements of this title.

There is, however, an implicit, longstanding exception to patent-eligible subject matter in 35 U.S.C. § 101: "[l]aws of nature, natural phenomena, and abstract ideas are not patentable." *Alice Corp. v. CLS Bank*

Int'l, 573 U.S. 208, 216 (2014) (citation omitted). This exception precludes patenting of "the basic tools of scientific and technological work" from which all inventions spring. *Id.* at 216–17 (quotation marks and citation omitted). Invention or discovery under § 101 is distinguished as being the application of such tools to an end otherwise satisfying the requirements of the patent statutes. *See Gottschalk v. Benson*, 409 U.S. 63, 67 (1972).

The Supreme Court has established a framework for this eligibility determination. Where a claim is directed towards a law of nature, natural phenomena, or abstract idea, the elements of the claim as a whole must ensure that the claim, in practice, amounts to significantly more than a patent on the law of nature, natural phenomena, or abstract idea itself. *Alice*, 573 U.S. at 217–18. In applying this eligibility analysis, our reviewing court has stated, "the decisional mechanism courts now apply is to examine earlier cases in which a similar or parallel descriptive nature can be seen[,] . . . the classic common law methodology for creating law when a single governing definitional context is not available." *Amdocs (Isr.) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1294 (Fed. Cir. 2016) (citation omitted).

To address the growing body of precedent, the USPTO recently published revised examination guidance on the application of § 101. 2019 Revised Patent Subject Matter Eligibility Guidance, 84 Fed. Reg. 50, 50 (Jan. 7, 2019) (hereinafter "2019 Guidance"). The 2019 Guidance seeks to improve the clarity of the subject matter eligibility analysis and improve consistency of this analysis across the USPTO. *Id.*

Under the 2019 Guidance, we first look to whether the claim is directed to a judicial exception because:

> (1) the claim recites a law of nature, natural phenomenon, or abstract
> idea, the last of which includes certain groupings, identified as
> mathematical concepts, certain methods of organizing human activity
> and mental processes; and
>
> (2) the claim as a whole fails to recite additional elements that
> integrate the judicial exception into a practical application (*see*
> MANUAL OF PATENT EXAMINATION PROCEDURE (hereinafter "MPEP")
> § 2106.05(a)–(c), (e)–(h)).

Only if a claim (1) recites a judicial exception and (2) does not integrate that
exception into a practical application, do we then look to whether the claim:

> adds a specific limitation beyond the judicial exception that are not
> "well-understood, routine, conventional" in the field (*see* MPEP
> § 2106.05(d)); or instead,
>
> simply appends well-understood, routine, conventional activities
> previously known to the industry, specified at a high level of
> generality, to the judicial exception.

See 2019 Guidance, *passim*.

2. Analysis

We have reviewed the Examiner's subject matter eligibility rejection
(Ans. 4–6) in light of Appellant's contentions that the Examiner has erred
(Reply Br. 2–4). We are not persuaded by Appellant's contention of
Examiner error in rejecting claims 1–7, 9–17, and 19 under 35 U.S.C. § 101.
We begin with claim 1.

a) "Recites an Abstract Idea"

The Examiner, in a rejection newly made in the Examiner's Answer,
has determined claim 1 to be directed to "the abstract idea of identifying

data, such as a logical operation and decision variables; and manipulating

data using mathematical correlations by constructing 'equivalent sets of

serialized instructions.'" Ans. 4. We understand the corresponding

limitations to be:

> identifying a first relational data table operating using a
> relational logical operation on a second relational data table in
> the instruction code, the relational logical operation comprising
> at least multiplication;
>
> selecting one or more sets of decision variables from identified
> tables and operation; [and]
>
> constructing one or more equivalent sets of serialized
> instructions comprising serial logical operations equivalent to
> the relational logical operation operating on one or more of the
> identified sets of decision variables.

The Examiner has found these limitations to be similar to concepts

previously identified by the courts as abstract, such as "*Digitech*, which

describes the abstract idea as organizing and manipulating information

through mathematical correlations." *Id*. at 4–5 (citing *Digitech Image

Techs., LLC. v. Elecs. for Imaging*, 758 F.3d 1344 (Fed. Cir. 2014)).

The USPTO's 2019 Guidance states that the abstract idea exception

includes mathematical concepts "when recited as such in a claim

limitation(s) (that is when recited on their own or per se)." 2019 Guidance,

84 Fed. Reg. at 52. In particular, Updated Guidance issued by the USPTO

in October 2019 characterizes mathematical concepts as including

mathematical relationships, mathematical formulas or equations, and

mathematical calculations. October 2019 Update: Subject Matter Eligibility

3–4, accessible at https://www.uspto.gov/sites/default/files

/documents/peg_oct_2019_update.pdf.

Claim 1 recites the mathematical operation of multiplication, in the form of identifying a relational logical operation comprising at least multiplication. Appeal Br. 11 (Claims App.). Claim 1 further comprises constructing serial logical operations equivalent to the multiplicative relational operation. *Id.* The Specification provides an example wherein A and B are relational tables having data columns a, b, and c, as illustrated below. Fig. 5.

Relational Data 206

<table>
<tr><td colspan="3">Table A</td></tr>
<tr><td>a</td><td>b</td><td>c</td></tr>
<tr><td>1</td><td>2</td><td>x</td></tr>
<tr><td>1</td><td>3</td><td>y</td></tr>
<tr><td>1</td><td>4</td><td>z</td></tr>
<tr><td>2</td><td>5</td><td>u</td></tr>
<tr><td>2</td><td>6</td><td>v</td></tr>
<tr><td>2</td><td>8</td><td>w</td></tr>
</table>

<table>
<tr><td colspan="3">Table B</td></tr>
<tr><td>a</td><td>b</td><td>c</td></tr>
<tr><td>1</td><td>2</td><td>10</td></tr>
<tr><td>1</td><td>3</td><td>20</td></tr>
<tr><td>1</td><td>4</td><td>30</td></tr>
<tr><td>2</td><td>5</td><td>100</td></tr>
<tr><td>2</td><td>6</td><td>100</td></tr>
<tr><td>2</td><td>7</td><td>200</td></tr>
</table>

Figure 5

Figure 5 illustrates relational data comprising Tables A and B.

Based upon the specific data in columns a, b, and c, the relational operation A(c).*(a,b).B(c) is converted to the serial operation $10*x + 20*y + 30*z + 100*u + 100*v$. Figs. 5, 6; Spec. ¶¶ 54–55.

Thus, claim 1 converts a relational mathematical operation involving multiplication to a serial mathematical operation involving multiplication. This type of mathematical operation, involving multiplicative calculations,

falls within the mathematical concept grouping. October 2019 Update 4 (characterizing a "mathematical operation (such as multiplication)" as a mathematical calculation). Thus, we determine that the above-identified limitations recite an abstract idea.

Our determination is consistent with the Supreme Court's analysis in *Gottschalk v. Benson*, 409 U.S. 63 (1972). *Benson* claimed a method of converting binary-coded decimal numerals to pure binary numerals. *Id.* at 67. The Court found that this method "varies the ordinary arithmetic steps a human would use by changing the order of the steps, changing the symbolism for writing the multiplier used in some steps, and by taking subtotals after each successive operation." *Id.* The Court described Benson's claimed method as "a generalized formulation for programs to solve mathematical problems of converting one form of numerical representation to another." *Id.* at 65. The Court reasoned that patenting Benson's claimed conversion would, in practical effect, patent an idea. *Id.* at 71.

Like *Benson*, claim 1 recites a generalized formulation for programs to solve mathematical problems of converting one form of numerical representation (relational multiplication) to another (serial multiplication). We determine that the Court's analysis in *Benson* therefore supports the Examiner's finding that claim 1 recites an abstract idea.

We further determine that the above-identified limitations of claim 1 recite acts of observation ("identifying . . ."), judgment ("selecting . . ."), evaluation ("constructing one or more equivalent sets . . ."). We further determine that, in view of the example discussed *supra*, one could practically perform these actions mentally, or with the aid of pen and paper.

Such acts are characteristic of mental processes, which comprise a category of abstract ideas. October 2019 Guidance, 7–9.

Under our controlling guidance, consistent with Court precedent, claim 1 recites an abstract idea under Step 2A, Prong 1.

b) "Directed to an Abstract Idea"

Having determined that claim 1 recites an abstract idea, we next determine, under Step 2A, Prong 2 of the 2019 Guidance, whether the claims are directed to that abstract idea, or whether the claims integrate the abstract idea into a practical application of that abstract idea. 2019 Guidance, 84 Fed. Reg. at 54.

The Examiner finds claim 1 to have elements additional to those limitations reciting an abstract idea; namely, generic computer device components including a processor. Ans. 5. The Examiner further determines that the involvement of the computing device amounts to no more than executing the abstract idea using computer functions. *Id.* The Examiner further finds that the additional, generically recited elements do not improve computer technology or any other technology, or provide meaningful limitations to the abstract idea. *Id.*

Appellant disagrees, arguing that claim 1 represents an improvement to computer technology by resulting in a reduced processing time. Reply Br. 3. Appellant argues eligibility based upon *Enfish LLC v. Microsoft Corp.*, in which a self-referential database, claimed as a set of rules, provided an improvement to computer-related technology. *Id.* at 2.

The USPTO's 2019 Guidance provides considerations, drawn from prior court precedent, that indicate that an additional element or combination of elements may have integrated a recited abstract idea into a practical

application. 2019 Guidance, 84 Fed. Reg. at 55. One such consideration is whether the additional element(s) reflect an improvement in the functioning of a computer or another technology or technical field. *Id.* Considerations indicating a lack of a practical application of the recited abstract idea include additional element(s) that amount to an instruction to implement the abstract idea on a computer or to otherwise instruct to "apply [the abstract idea]." *Id.* Other such considerations indicating a lack of a practical application include additional elements that add insignificant extra-solution activity to the abstract idea, or that merely link the abstract idea to a particularly technological environment. *Id.*

Under this framework, we analyze the additional elements in claim 1, which, as discussed *supra*, are:

> [R]educing computer processing time required by a computer processor to determine a solution to the problem by processing, using the computer processor, the equivalent sets of serialized instructions instead of the relational logical operation.

We construe this language as the action of processing the sets of serialized instructions (which were constructed in the limitations identified as an abstract idea) by a computer processor. The processing is claimed to reduce computer processing time relative to the time it would take to process the equivalent relational logical operation. The reduction of computer time is explained to be achieved through the conversion of the relationships to serial operations, which require a lesser amount of computer processing relative to relational operations. Spec. ¶ 4 ("[the mathematical notation] can lead to very complex expressions when used together with complex/nested data structures"); Reply Br. 3 ("Solving such complex expressions would inherently require substantial computer processing power and processing

time"). Because the conversion of the relationships to serial operations is part of the abstract idea, rather than any particular function of the processor, any alleged improvement to computer processing time would therefore be due to the abstract mental or mathematical actions.

Viewing the abstract idea together with the additional elements, the involvement of the additional computer elements amounts to mere instructions to implement the abstract idea on a computer. The claim does not limit how those instructions are used by the processor, merely instructing one to "us[e] the computer processor" to process the sets of serialized instructions. Appeal Br. 11 (Claims App.). Furthermore, claim 1 does not require that the construction of serial operations themselves be performed by a computer, only that the serial operations, once constructed, be processed by a computer. *Id.* Consequently, the reduction in computer processing time, which is the alleged improvement to technology, results from the construction of equivalent sets, which is part of the abstract idea.

Accordingly, we are not persuaded by Appellant that the reduction in processing time reflects an improvement in the functioning of the computer. Rather, we agree with the Examiner that involvement of the computer, set forth in the additional limitations of claim 1, amounts to no more than instructions to implement the claimed mathematical problem-solving method on a generic computer, thereby using the computer as a tool to perform the abstract idea. For the above reasons, we determine that the claim is directed towards the abstract idea.

We again look to the analysis set forth in *Gottschalk v. Benson*. The Court in *Benson* found that the claimed mathematical procedures "can be carried out in existing computers long in use [or] without a computer." 409

U.S. at 67. The Court found that, despite the involvement of the computer in carrying out the calculations, the practical result of the claim would be a patent on claimed mathematical conversion itself. *Id.* at 71–72. Other court cases have also found that increasing the speed of a process, where these purported improvements come solely from the capabilities of a general-purpose computer, are not sufficient to show an improvement in computer functionality. *FairWarning IP, LLC v. Iatric Sys.,* 839 F.3d 1089, 1095 (Fed. Cir. 2016); *Credit Acceptance Corp. v. Westlake Services,* 859 F.3d 1044, 1055 (Fed. Cir. 2017).

We have considered Appellant's invocation of *Enfish*. *Enfish* addressed claims to a "self-referential" database, which was contrasted with "the more standard 'relational'" database. *Enfish*, 822 F.3d at 1330. Like Appellant's invention, *Enfish* provided "all of the information about documents, persons, and companies are stored in a single table," and this allowed for faster searching of data than would be possible with the relational model. *Id.* at 1332-33.

However, the reasons why the claims at issue in *Enfish* were eligible do not apply here. The *Enfish* court held that those claims "are directed to a specific improvement to the way computers operate, embodied in the self-referential table." *Id.* at 1336. Enfish's eligible claim 17 included a "means for configuring said memory according to a logical table." *Id.* The court construed the "means for configuring" language as requiring a four-step algorithm describing the relationship between rows and columns. *Id.* An additional advantage of Enfish's eligible claim was that the "database of the present invention does not require a programmer to preconfigure a structure to which a user must adapt data entry." *Id.* Unlike the eligible claim in

Enfish, Appellant's claim 1 does not recite a particular computer structure, but rather, recites operations that may be taken (including outside the computer realm) to produce serial multiplicative operations. These operations, preconfigured prior to processing on the computer, do not provide a database that, like Enfish's database, can be "configured on-the-fly." Furthermore, Appellant's claim 1 does not exhibit limitations of the same character as Enfish's specific, four-part algorithm for configuring the self-referential properties. Instead, claim 1's exhortation to "construct[]" equivalent sets, absent the details of such construction, provides at best "generalized steps to be performed on a computer using conventional computer activity." *Id.* at 1338 (citing *Internet Patents Corp. v. Active Network, Inc.*, 790 F.3d 1343, 1348–49 (Fed. Cir. 2015) (described by the *Enfish* court as "claims directed to abstract idea of maintaining computer state without recitation of specific activity used to generate that result"). Consequently, we are not persuaded that *Enfish* guides us to a determination of eligibility for claim 1.

Based upon our controlling guidance and court precedent, we determine that claim 1 is directed towards the recited abstract idea, and that the recited abstract idea is not integrated into a practical application of that idea.

c) *Significantly More than the Abstract Idea*

Having determined that claim 1 is directed to an abstract idea, we next determine, under Step 2B of the 2019 Guidance, whether the claims amount to significantly more than the abstract idea itself. 2019 Guidance, 84 Fed. Reg. at 56. A determination that the claims are significantly more may be

indicated where additional limitations, either alone or in combination, are not well-understood, routine, conventional activity in the field. *Id.*

The Examiner finds the additional elements to be "generic computer structure that serves to perform generic computer functions known to the pertinent industry." Ans. 5. The Examiner further finds that when all of the limitations are taken together as an ordered combination, their "collective functions merely provide conventional computer implementation." *Id.*

Appellant has not specifically traversed the Examiner's finding that the combination of elements merely provides conventional computer implementation, with the use of known computer functions. *See* Reply Br. 2–4.

In the absence of argument to the contrary, we are not persuaded that the Examiner erred in finding the additional limitations, taken alone or as an ordered combination, to be well-understood, routine, conventional activity. Review of the Appellant's Specification supports the Examiner's finding. Appellant's computer system may comprise "hardware components, firmware components," or "a programmable logic array or application-specific integrated circuit." Spec. ¶¶ 75–77. The claimed method may "be carried out fully or partially in software running on one or more processors (not shown in the figures)." *Id.* ¶ 78. The claimed instructions "can be written in a number of programming languages for use with many computer architectures or operating systems," and may be stored "using any memory technology, present or future." *Id.* ¶ 80.

Furthermore, the use of a computer for the function of performing repetitive calculations has been recognized by the courts as well-understood, routine, conventional activity. *Parker v. Flook,* 437 U.S. 584, 594 (1978)

14

(recomputing or readjusting alarm limit values); *Bancorp Servs. v. Sun Life,* 687 F.3d 1266, 1278 (Fed. Cir. 2012) ("The computer required by some of *Bancorp*'s claims is employed only for its most basic function, the performance of repetitive calculations, and as such does not impose meaningful limits on the scope of those claims."). Consequently, we agree with the Examiner's determination that the claims do not provide significantly more than the identified abstract idea.

d) Summary

In view of the foregoing, under the 2019 Guidance, informed by our governing case law concerning 35 U.S.C. § 101, Appellant has not shown the Examiner erred in concluding claim 1 is directed to a judicial exception, i.e., an abstract idea, without significantly more. We therefore affirm the Examiner's rejection of claim 1. Because Appellant argues claims 2–7, 9–17, and 19 on the same grounds as claim 1, we also affirm the Examiner's rejection of claims 2–7, 9–17, and 19. 37 C.F.R. 41.37(c)(1)(iv).

B. Obviousness

We have reviewed the Examiner's obviousness rejections (Final Act. 4–8) in light of Appellant's contentions that the Examiner has erred (Appeal Br. 4–9). We have also reviewed the discussion of the obviousness rejections in the Examiner's Answer (Ans. 6–9) and the Reply Brief (Reply Br. 4–10). We are persuaded by Appellant's contention of Examiner error in rejecting claims 1–7, 9–17, and 19 under 35 U.S.C. § 103. We begin with claim 1.

a) *"relational logical operation"*

Appellant first contends that the rejection of claim 1 is defective because Graefe and Kneisel do not teach or suggest the following limitations of claim 1:

> identifying a first relational data table operating using a relational logical operation on a second relational data table in the instruction code, the relational logical operation comprising at least multiplication,
>
> and
>
> constructing one or more equivalent sets of serialized instructions comprising serial logical operations **equivalent to the relational logical operation** operating on one or more of the identified sets of decision variables.

Appeal Br. 4.

The Examiner finds Graefe to teach the above-disputed limitations, with the exception of the relational logical operation comprising at least multiplication. Final Act. 4. The Examiner finds Graefe's "Select" statement to be a table operating on another table, thereby teaching or suggesting the "identifying" limitation. *Id.* (citing Graefe ¶ 30). The Examiner finds Graefe's "Select" statement to identify tables, such as "Phones" and "Children," and then to use operators such as "FROM, AS, [and] FOR" to operate on the tables. Ans. 6 (citing Graefe ¶¶ 30, 32, 33). The Examiner further finds the Specification to define "relational logical operation," and that the portions of the Specification relied upon by the Appellant describe nothing more than the type of operations described by Graefe. Ans. 7 (citing Appellant's reference to Spec. ¶¶ 8 and 50, and step 402 illustrated in Fig. 4, at Appeal Br. 2). The Examiner additionally finds Graefe's "equivalence rewrite transformations" to transform execution

statements, and thereby teach or suggest the "constructing" limitation. Final
Act. 5 (citing ¶ 60).

Appellant argues that Graefe's "Select" statement does not teach the
claimed "relational logical operation." Appeal Br. 4. Appellant
characterizes Graefe's "Select" statement as using the Phones, Children, and
Contacts tables to produce an XML document having specific data from
each table. *Id.* at 6–7. Appellant argues that the "Select" statement "simply
specifies information to be searched for and retrieved from a database using
a query including an XML aggregator nested within another XML
aggregator, and is completely unrelated to any type of 'relational logical
operation' performed by one relational data table on another relational data
table." *Id.* at 8.

When determining patentability of an invention over the prior art,
such as in an obviousness inquiry, all claim limitations must be
considered. *In re Gulack,* 703 F.2d 1381, 1385 (Fed. Cir. 1983); *see also In
re Wilson,* 424 F.2d 1382, 1385 (CCPA 1970) ("All words in a claim must
be considered in judging the patentability of that claim against the prior
art").

We are not persuaded by Appellant that Graefe fails to teach or
suggest the claimed "relational logical operation." Appeal Br. 8. The
Examiner has pointed to Graefe's operators, such as "FROM," as indicating
a relational logical operation. Ans. 6. Graefe refers to "FROM" as used "to
aggregate data from a row set into a complex scalar . . . when formatting
relational data as XML data (e.g., SELECT Contacts.* From Contacts For
XML)." Graefe ¶ 14. Graefe further discusses the actions of Apply
operators 48 and 50 performing a correlated join of data from more than one

17

table into a single result table. In view of the Examiner's explanation, supported by Graefe, Appellant has not persuaded us that Graefe fails to teach or suggest a "relational logical operation" as set forth in claim 1.

> b) *Combination of Graefe and Kneisel*

Appellant next contends that the Examiner has not provided an acceptable rationale for combining Graefe and Kneisel, or a sensible explanation of how Graefe would be modified by Kneisel to result in the claimed invention. Appeal Br. at 9.

The Examiner finds Kneisel to teach or suggest using mathematical expressions in command statements. Final Act. 4 (citing Kneisel ¶¶ 39, 128). The Examiner finds that one having ordinary skill in the art would have been motivated to modify Graefe with Kneisel "in order to execute a particular command with particular parameters." Final Act. 5. The Examiner further finds, "[p]rogramming languages are often used interchangeably in the industry where certain languages are translated into other languages." The Examiner further explains that the "combination of the references provide for transforming database statements, which include mathematical statements such as multiplication, into a particular format." Ans. 8, 9.

Appellant argues that Graefe is directed to "formatting a relational row set as XML data" by "using a query including an XML aggregator nested within another XML aggregator." Appeal Br. 5–8 (citing Graefe ¶ 30). Appellant further argues that one skilled in the art would not have been motivated to "incorporate the COBOL mathematical expressions disclosed by Kneisel into a database query [including an XML aggregator] such as that disclosed by Graefe as suggested by the Examiner [because

s]uch a modification is nonsensical and completely unsupported by either Graefe, Kneisel, or the Examiner's motivation to combine." Appeal Br. 8, 9.

Obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn,* 441 F.3d 977, 986 (Fed. Cir. 2006). Where there is a reason to modify or combine the prior art to achieve the claimed invention, the claims may be rejected as obvious provided there is also a reasonable expectation of success. *In re Merck & Co., Inc.,* 800 F.2d 1091(Fed. Cir. 1986).

We are persuaded by Appellant that the Examiner has not shown an articulated reason with a rational underpinning to combine the references to teach or suggest the claimed invention. As a reason to combine, the Examiner states that the combination would result in the ability to "execute a particular command with particular parameters." Final Act. 5. The Examiner further states that the combination would "provide for transforming database statements, which include mathematical statements such as multiplication, into a particular format." Ans. 9.

However, the Examiner has not explained how identifying mathematical expressions, such as existing in the command statements of Kneisel, would have advantageously modified Graefe. The Examiner has stated further that programming languages are often used interchangeably, having code in one language embedded in code of another language, and that accordingly, the use of XML in Graefe and COBOL in Kneisel "does not invalidate reasons to combine." Ans. 8. However, the statements of the Examiner merely explain the intended outcome of the combination. Although the combination may result in transforming database statements

19

into a particular format, the Examiner has not explained why that would have been desirable. Furthermore, the ability to "execute a particular command with particular parameters" is an ability that Graefe already possesses. The Examiner's statements do not explain why incorporating multiplication into the process of Graefe would have been advantageous to Graefe in any particular manner. Nor has the Examiner articulated any other reason to combine the relied-upon teachings or suggestions of Graefe and Kneisel to result in the claimed invention. Accordingly, we are persuaded by Appellant that the Examiner has not set forth an acceptable reason to combine Graefe and Kneisel.

Additionally, we are persuaded by Appellant that the Examiner has not explained how the combination would have been achieved with a reasonable expectation of success. The Examiner combines Graefe's performing a correlated join of data from more than one table into a single result table with Kneisel's use of multiplication in command statements. However, the Examiner does not explain how those disparate actions would be combined to result in the claimed invention. Specifically, the Examiner does not explain how Graefe's particular table-joining operation would be combined with Kneisel's particular multiplication operation to arrive at the claimed invention with a reasonable expectation of success.

For the above-mentioned reasons, we are persuaded that the Examiner has not shown that the combination of Graefe and Kneisel teaches or suggests the invention of claim 1. Because the rejection of claims 2–7, 11–17, and 19 rely on the same combination, we are also persuaded that the Examiner has not shown that the combination of Graefe and Kneisel teaches or suggests the invention of claims 2–7, 11–17, and 19. For those reasons,

and because the Examiner has not shown Boswell to provide the missing teachings or suggestions, we are also persuaded that the Examiner has not shown that the combination of Graefe, Kneisel, and Boswell teaches or suggests the invention of claims 9 and 10.

CONCLUSION

For the above-described reasons, we reverse the Examiner's rejection of claims 1–7, 11–17, and 19 as being obvious over the combination of Graefe and Kneisel, and the Examiner's rejection of claims 9 and 10 as being obvious over the combination of Graefe, Kneisel, and Boswell. We affirm the Examiner's rejection of claims 1–7, 9–17, and 19 as lacking subject matter eligibility under 35 U.S.C. § 101.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	References/Grounds	Affirmed	Reversed
1–7, 9–17, 19	101	Eligibility	1–7, 9–17, 19	
1–7, 11–17, 19	103	Graefe, Kneisel		1–7, 11–17, 19
9, 10	103	Graefe, Kneisel, Boswell		9, 10
Overall Outcome			1–7, 9–17, 19	

21

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. § 1.136(a)(1)(iv).

<div align="center">

AFFIRMED

</div>