2010 WL 2901727 (Bd.Pat.App. & Interf.)

Board of Patent Appeals and Interferences
Patent and Trademark Office (P.T.O.)

***1** Ex Parte Frank S. Caccavale, Sridhar C. Villapakkam, and Skye W. Spear

Appeal 2009-006026
Application 10/441,866
[FN1]

Technology Center 2400

July 23, 2010

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Before JOHN A. JEFFERY, JOSEPH L. DIXON, and JAY P. LUCAS
Administrative Patent Judges
LUCAS
Administrative Patent Judge

DECISION ON APPEAL[FN2]

STATEMENT OF THE CASE

Appellants appeal from a final rejection of claims 2, 7 to 10, 13, 15 to 21, 26 to 28, 30, 35 to 39, 41, 43 to 49, and 54 to 57 under authority of 35 U.S.C. § 134(a). The Board of Patent Appeals and Interferences (BPAI) has jurisdiction under 35 U.S.C. § 6(b). Claims 1, 3 to 6, 11, 12, 14, 22 to 25, 29, 31 to 34, 40, 42, and 50 to 53 are cancelled.

We affirm-in-part.

Appellants' invention relates to a method of assessing the performance of distributed processing units that involves collecting performance parameters from the units (Spec. ¶ [0028]). In the words of Appellants:

> The Internet servers function as distributed data processing units. The analysis engine application collects performance parameters from the Internet servers in order to determine a measure of system performance, and to trigger an alarm when the measure of system performance indicates a presence of system degradation.

(Spec. ¶ [0034]).

Claim 8 is exemplary and is reproduced below:

> 8. In a data processing system including distributed processing units, a method of analysis of performance of the data

processing system, said method comprising:
each of the distributed processing units accumulating performance parameters including response time measurements and workload across intervals of time, said each of the distributed processing units storing the performance parameters accumulated by said each of the distributed processing units in an industry standard database in said each of the distributed processing units; and
accessing the industry standard databases over the data processing system to retrieve the performance parameters accumulated by the distributed processing units, and determining a measure of performance of the data processing system from the retrieved performance parameters;
wherein the industry standard database is the Windows Management Instrumentation database, and the method includes said each distributed processing unit using an operating system to store the performance parameters accumulated by said each of the distributed processing units in the Windows Management Instrumentation database;
wherein the measure of performance of the data processing system is a measure of metric entropy of the data processing system, and the measure of metric entropy of the data processing system is computed from the performance parameters retrieved from the industry standard database by computing an average response time over the distributed processing units, computing a histogram of the average response time over the distributed processing units, and computing the measure of metric entropy of the data processing system from the histogram.

***2** The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Caccavale	US 5,664,106	Sep. 02, 1997
Molloy	US 2003/0115244 A1	Jun. 19, 2003 (filed Dec. 17, 2001)
Corley	US 2004/0088406 A1	May 06, 2004 (filed Oct. 31, 2002)

REJECTIONS

The Examiner rejects the claims as follows:

R1: Claims 7 to 10 and 15 to 21 stand rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter.

R2[FN3]: Claims 2, 7 to 10, 13, 15 to 21, 26 to 28, 30, 35 to 39, 41, 43 to 49, and 54 to 57 stand rejected under 35 U.S.C. § 103(a) for being obvious over Molloy.

Appellants contend that the subject matter of claims 7 to 10 and 15 to 21 is statutory (App. Br. 25, middle). Appellants further contend that Molloy[FN4] does not render the claimed subject matter unpatentable because the references fail to teach that "an average response time" is computed "over the distributed processing units," as required by exemplary claim 8 (App. Br. 37, middle). The Examiner contends that each of the claims is properly rejected (Ans. 19, bottom).

We will review the rejections in the order argued, and as grouped in the Briefs. We have only considered those arguments that Appellants actually raised in the Briefs. Arguments that Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

ISSUES

The issues involve whether Appellants have shown that the Examiner erred in rejecting the claims under 35 U.S.C. §§ 101 and 103(a). The first issue under 35 U.S.C. § 101 specifically turns on whether independent method claim 8 meets the machine-or-transformation test recognized by the Supreme Court as an important tool for establishing subject-matter eligibility, *see Bilski v. Kappos,* cited *infra,* and explained by the Federal Circuit in *In re Bilski,* cited *infra.* More spe-

cifically, the first issue is whether, under the machine prong of the *Bilski* test, a machine performs Appellants' claim limitations "metric entropy … is computed … by computing an average response time," "computing a histogram of the average response time," and "computing … metric entropy … from the histogram." The second issue, under 35 U.S.C. § 103(a), specifically turns on whether the Molloy reference discloses that "an average response time," is actually computed "over the distributed processing units," as required by exemplary claim 8 (App. Br. 37, middle).

FINDINGS OF FACT

***3** The record supports the following findings of fact (FF) by a preponderance of the evidence.

Disclosure

1. Appellants have invented a method and system of performing statistical analysis on a data processing system that includes distributed processing units (claims 8 and 15; Spec. [¶ 0010]). The method includes measuring the metric entropy of a system by calculating the average response time over the distributed processing units and computing a histogram of the average response time over the distributed processing units (claim 8).

Molloy

2. The Molloy reference discloses a method of performing statistical analysis on a data processing system that includes resources, such as servers (Abstract; ¶¶ [0005] and [0027]). Molloy further discloses computing a graph of average response times over the servers (¶¶ [0005] and [0027]).

Caccavale

3. The Examiner has taken Official Notice that the Caccavale reference discloses measuring entropy by calculating a response time of a server (col. 4, ll. 15-20; Ans. 6, middle). Caccavale further discloses measuring activity in the system of several servers by calculating the servers' response times "with respect to each server in the system thereby forming a separate graph and triggering a separate alarm for each server." (Col. 29, ll. 20-25).

Corley

4. The Corley reference discloses Windows Management Instrumentation database (¶ [0034]).

PRINCIPLES OF LAW

Appellants have the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn,* 441 F.3d 977, 985-86 (Fed. Cir. 2006).

"[The Supreme] Court's precedents establish that the machine-or-transformation test is a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under §101. The machine-or-transformation test is not the sole test for deciding whether an invention is a patent-eligible 'process."' *See Bilski v. Kappos,* No. 08-964, 2010 WL 2555192, at * 8 (June 28, 2010) (majority slip op. at Part-II-B1).

The Court of Appeals for the Federal Circuit (CAFC) stated the machine-or-transformation test for process claims. *In re Bilski,* 545 F.3d 943 (Fed. Cir. 2008) (en banc). The involvement of the machine or transformation in the claimed process must not merely be insignificant extrasolution activity. *See Parker v. Flook,* 437 U.S. 437 U.S. 584, 590 (1978).

The Supreme Court, in *Bilski v. Kappos,* 2010 WL 2555192, at * 10 (2010) (majority slip op. at Part II-C-2), held that

there are other tools for establishing subject matter eligibility under 35 U.S.C. § 101. Those tools involve an inquiry into whether a process is merely an abstract idea. "In searching for a limiting principle, this Court's precedents on the unpatentability of abstract ideas provide useful tools." (*Id.*). The Court outlined one such precedent:

> ***4** In [*Gottschalk v.*] *Benson,* 409 U.S. [63], 70 [(CCPA 1972)], the Court considered whether a patent application for an algorithm to convert binary-coded decimal numerals into pure binary code was a "process" under §101. *Id.* at 64-67. The Court first explained that "'[a] principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."' *Id.* at 67 (quoting *Le Roy,* [55 U.S.156, 175 (1852)]). The Court then held the application at issue was not a "process," but an unpatentable abstract idea. "It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting … numerals to pure binary numerals were patented in this case." 409 U. S. [63], at 71. A contrary holding "would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." *Id.* at 72.

(*Id.* at *11 (Part III)).

"It is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 402 (2007).

"[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *Kahn,* 441 F.3d at 988).

> [W]hile an analysis of obviousness always depends on evidence that supports the required Graham factual findings, it also may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference or expert opinion.

Perfect Web Technologies, Inc. v. InfoUSA, Inc., 587 F.3d 1324, 1329 (Fed. Cir. 2009)(Board's emphasis).

Our reviewing court states in *In re Zletz,* 893 F.2d 319, 321 (Fed. Cir. 1989) that "claims must be interpreted as broadly as their terms reasonably allow."

ANALYSIS

Argument with respect to the rejection of claims 7 to 10 and 15 to 21 under 35 U.S.C. § 101 [R1]

***5** Appellants argue a "measure of metric entropy," as recited in independent method claim 8 "is a 'useful, concrete, and tangible' result of the process." (App. Br. 25, middle).

Since the time Appellants filed their Appeal Brief, the Supreme Court issued *Bilski v. Kappos,* cited above, a decision addressing what qualifies as statutory subject matter for method claims. The Court pointed to the machine-or-transformation standard as "a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes." *Bilski v. Kappos,* cited above. Thus, we first address independent claim 8 under the machine-or-transformation test.

We find that Appellants' claimed "distributed processing units" fail to qualify as a machine with respect to Appellants' claim limitations "metric entropy … is computed … by computing an average response time," "computing a histogram of the average response time," and "computing … metric entropy … from the histogram." Claim 8 simply fails to recite that the computations are performed by the "distributed processing units" or any other machine in claim 8. We read Appellants' claimed step of "storing the performance parameters accumulated by said each of the distributed processing units"

as merely "insignificant extra-solution activity," which the Federal Circuit warned against giving weight to when determining if subject matter qualifies as statutory. (*In re Bilski*, cited above.). For the abovestated reasons, we find that the claim fails to meet the machine prong of the machine-or-transformation test.

In addition, we see no evidence that the computations recited in the claim language transform an article of manufacture. Rather, Appellants' computations are merely statistical analysis computations and, thus, fail to satisfy the transformation prong of the machine-or-transformation test. Since claim 8 meets neither the machine nor the transformation prongs of the machine-or-transformation test and in light of the Court's recognition of the test as "a useful … tool, for determining whether some claimed inventions are processes," *Bilski v. Kappos*, cited above, we find no error in the Examiner's rejection R1 under this test for subject-matter eligibility.

However, our guidance from the Supreme Court in *Bilski v. Kappos*, cited above, states that the machine-or-transformation test is not the endpoint for our inquiry under 35 U.S.C. § 101. We thus analyze claim 8 under one of the Court's precedential tools (*i.e.*, the case of *Gottschalk v. Benson*, cited above) for determining whether a process is an abstract idea.

***6** As we stated above, claim 8 merely involves a process of statistical analysis computations. (*See supra.*) Appellants' computational process claim is comparable with the algorithm to convert binary-coded decimal numerals into pure binary code in *Benson*, in that Appellants seek to patent an idea. If such computational processes were not barred under 35 U.S.C. § 101, then the processes "would wholly pre-empt the mathematical formula and in practical effect would be a patent on the algorithm itself." (*Benson*, cited above.) We thus find that Appellants' claim 8 is merely an abstract idea in accordance with *Benson*, a precedential case relied upon in *Bilski v. Kappos* as a "useful … investigative tool" for determining subject-matter eligibility. Accordingly, we affirm the Examiner's rejection R1.

Argument with respect to the rejection of claims 2, 7 to 10, 13, 15 to 21, 26 to 28, 30, 35 to 39, 41, 43 to 49, and 54 to 57 under 35 U.S.C. § 103(a) [R2]

Appellants contend: "Caccavale … is dealing with the metric entropy of one server, and not the metric entropy of a system including distributed processing units. There is nothing in Molloy or Caccavale suggesting that one should compute 'an average response time over the distributed processing units, and then compute a histogram … over the distributed processing units."' (App. Br. 37, middle) (emphasis omitted).

We carefully reviewed the Briefs, the Answer, the cited portions of Molloy and Caccavale, and indeed the entire references. We find that Appellants have invented a method and system of performing statistical analysis on a data processing system that includes distributed processing units (FF#1). The method includes measuring the system's metric entropy by calculating an average response time over the distributed processing units and computing a histogram of the average response time over the distributed processing units (*id.*).

In comparison, Molloy's invention performs statistical analysis on a data processing system that includes resources, such as servers (FF#2). Molloy further discloses computing a graph of average response times over the servers (Appellants' claimed "distributed processing units") (*id.*).

The Examiner has taken Official Notice that the Caccavale reference discloses measuring entropy by calculating a response time of a server or the response time of each of several servers in a system (FF#3; Ans. 6, middle). We adopt and endorse the Examiner's Official Notice (FF#3). However, we find that Molloy's teachings and the Official Notice taken are insufficient to render the argued claim limitations obvious. It would be beyond the bounds of Official Notice to use Caccavale for its further teachings. Accordingly, we reverse the obviousness rejection over Molloy alone.

CONCLUSIONS OF LAW

***7** Based on the findings of facts and analysis above, we conclude that the Examiner did not err in the non-statutory subject matter rejection R1 of claims 7 to 10 and 15 to 21. We conclude that the Examiner erred in the obviousness rejection R2 of claims 2, 7 to 10, 13, 15 to 21, 26 to 28, 30, 35 to 39, 41, 43 to 47, and 54 to 57.

REJECTION OF CLAIMS 2, 7 TO 10, 13, 15 TO 21, 26 TO 28, 30, 35 TO 39, 41, 43 TO 49, AND 54 TO 57 UNDER 37 C.F.R. § 41.50(B)

We make the following new ground of rejection [R3] using our authority under 37 C.F.R. § 41.50(b).

Rejection [R3]:

Claims 2, 7 to 10, 13, 15 to 21, 26 to 28, 30, 35 to 39, 41, 43 to 49, and 54 to 57 are rejected under 35 U.S.C. § 103(a) for being obvious over Molloy and Caccavale in view of Corley.

As stated above, we found that Molloy's invention performs statistical analysis on networked servers. (*See* FF#2.) Molloy further discloses computing a graph of average response times over the servers (Appellants' claimed "distributed processing units") (*id.*). We find that the Caccavale further discloses measuring activity in the system of several servers by calculating the servers' response times "with respect to each server in the system thereby forming a separate graph and triggering a separate alarm for each server." (FF #3). In addition, we find that the Corley reference discloses Windows Management Instrumentation database (FF#4).

"[F]amiliar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a puzzle." *KSR Int'l Co. v. Teleflex, Inc.*, cited above.

Averaging the metric entropy of servers in a system would have been an obvious adaptation, in accordance with the teachings of *KSR*, cited above, to a person of ordinary skill in the art. The combination of Molloy's teachings for monitoring servers of a whole system (*see* FF#2) and Caccavale's teachings for measuring metric entropy in a single server or each of several servers (*see* FF#3) would have led a skilled artisan to arrange the pieces of Molloy and Caccavale like the pieces of a puzzle for the purpose of gauging a system's "metric entropy," as claimed. Our guidance in *KSR*, cited above, requires that we state a rationale for combining references. Here, given Molloy's teaching of statistical analysis measurement over a network of servers in a system (FF#2), we find that it would have been obvious to a person of ordinary skill in the art to take further measurements, such as Caccavale's metric entropy measurements (FF#3), to gauge the responsiveness of the servers, on average, over the networked system of servers.

***8** For the sake of judicial economy, we respond below to Appellants' arguments made with respect to the Examiner's original formulation of the rejection R2.

With respect to the rejection R2, we note that the Examiner found that a histogram may "simply be data that is associated with a time, where the data is collected for more than one time period." (Ans. 15, bottom).

Appellants then argued: "The computing of the histogram should not be given 'little weight' simply because the computed histogram data is an intermediate result that is never displayed to a human user." (App. Br. 38, top).

We see no evidence in the record stating implicitly or explicitly that the Examiner gave "little weight" to computing of Appellants' claimed "histogram" (*Id.*; *see* Ans. 15, bottom). We acknowledge that a histogram may be a graph based upon a statistical calculation of frequency distribution, as Appellants assert (Reply. Br. 4, bottom). However, we note

that a histogram may correspond with the Examiner's finding that a histogram may "simply be data that is associated with a time, where the data is collected for more than one time period." (Ans. 15, bottom). We note that the Caccavale patent discloses: "The tuning system derives a value for the entropy of the server from these measured response time values and plots these entropy values on a graph as a function of time." (Col. 4, ll. 15-18). Reading the claims broadly, but reasonably, *see In re Zletz*, cited above, we find Caccavale's disclosure sufficient to meet Appellants' claim limitation "computing a histogram" since Caccavale discloses the further step of actually producing a graph that relates the time and entropy values on which Appellants' "computed histogram data" is calculated. Accordingly, we find no error.

With respect to the rejection R2, Appellants contended: "Nor should … claims be construed to say that 'calculating the histogram' does not 'create' a histogram. The result of calculating the histogram (i.e., the data points of frequency distribution) is used in the last step of 'computing the measure of metric entropy of the data processing system from the histogram."' (App. Br. 38) (emphasis omitted).

Regardless of whether the histogram is created or merely calculated, we found above that Appellants' claim limitation "computing the measure of metric entropy of the data processing system from the histogram" is met by Caccavale's disclosure. (*See supra.*)

Regarding the rejection R2, Appellants argued: "Nor is the computing of the average response time with respect to each distributed processing unit 'equivalent' to computing a histogram of the average response time over the distributed processing units." (App. Br. 38, bottom).

***9** "[Obviousness analysis] may include recourse to logic, judgment, and common sense available to the person of ordinary skill that do not necessarily require explication in any reference." (*Perfect Web Technologies, Inc. v. InfoUSA, Inc.*, cited above).

We note that networking resources, such as servers, were well-known in the art at the time of the claimed invention. (*See* Molloy, Abstract.) We further note that Caccavale discloses: "In a system including several servers, the […] process [of calculating the servers' response times] can be performed with respect to each server in the system thereby forming a separate graph and triggering a separate alarm for each server." (FF#3). The idea that a skilled artisan would have recognized the advantage of averaging response time over several servers, instead of each of several servers in a system, merely requires "recourse to logic, judgment, and common sense." *Perfect Web Technologies*, cited above. We thus find that by virtue of the skilled artisan's "recourse to logic, judgment, and common sense," (*id.*), the artisan would have made the logical step from computing the average response time of each server (identified as Appellants' claimed "distributed processing unit") to "computing an average response time over the distributed processing units," as recited in the claim language.

Regarding the rejection R2, Appellants argued: "[C]laims 15, 20, 26, 43, 48, and 54 specifically claim computing an average response time of each distributed processing unit or server, in addition to separately claiming the computing of the histogram, so that under claim differentiation, the computing of the average response time with respect to each distributed processing unit is understood to be different from computing a histogram of the average response time over the distributed processing units." (App. Br. 39, middle).

Computing a histogram involves aggregating computations of average response times. That is, average response times feed into the computation of the "histogram," as claimed.

Appellants argued: "Nor does the fact that alarms could be generated directly from the average response time with respect to each data processing unit indicate that computation of the average response time with respect to each data pro-

cessing unit is equivalent to computing a histogram of the average response time over the distributed processing units." (App. Br. 39, middle).

We find unpersuasive Appellants' above-stated argument. We direct Appellants' attention to our discussion of *KSR.* (*See supra.*)

In the Brief, Appellants argued that claims 9, 10, 16, 17, 19, 27, 28, 37, 38, 44, 45, 47, 55, and 56 are patentable because "[s]uch an accumulation of occurrences in a two-dimensional phase space is clearly different from simply computing the average response time with respect to each distributed processing unit. Therefore, these claims clearly distinguish the server metrics of Molloy." (App. Br. 42, bottom).

***10** We note that the Caccavale reference clearly discloses a plurality of servers in which response times are measured on each of the servers (FF#3). The patent says: "In a system including several servers, the above described process can be performed with respect to each server in the system thereby forming a separate graph and triggering a separate alarm for each server." (*Id.*). Molloy's disclosure of taking measurements over multiple servers is comparable, in that both references involve servers that are being monitored in a system. A person of ordinary skill in the art would have recognized the advantage of combining Caccavale's and Molloy's disclosures, applying the skilled artisan's "recourse to logic, judgment, and common sense," *Perfect Web Technologies*, cited above, for purposes of "computing an average response times over the servers," as claimed.

DECISION

As noted above, we have sustained the Examiner's 35 U.S.C. § 101 rejection R1 with respect to claims 7 to 10 and 15 to 21. We hereby reverse the Examiner's rejection R2 over Molloy alone, but we enter a new ground of rejection [R3] under 37 C.F.R. § 41.50(b) for claims 2, 7 to 10, 13, 15 to 21, 26 to 28, 30, 35 to 39, 41, 43 to 49, and 54 to 57 for being obvious under 35 U.S.C. § 103(a) over Molloy and Caccavale in view of Corley.

Regarding the affirmed rejection R1, 37 C.F.R. § 41.52(a)(1) provides that "Appellant may file a single request for rehearing within two months from the date of the original decision of the Board."

In addition to affirming the Examiner's rejection [R1] of one or more claims, this decision contains a new ground of rejection [R3] pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) provides that "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner.…
>
> (2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record.…

***11** Should Appellants elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection R1, the effective date of the affirmance is deferred until conclusion of the prosecution before the Examiner unless, as a mere incident to the limited prosecution, the affirmed rejection [R1] is overcome.

If Appellants elect prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection [R1], including any timely request for rehearing thereof.

AFFIRMED-IN-PART 37 C.F.R. § 41.50(b)

FN1. Application filed May 20, 2003. The real party in interest is EMC Corporation.

FN2. The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

FN3. The Examiner cited Corley and Caccavale as evidence of skill in the art with respect to Windows Management Instrumentation databases and performance metric analysis/entropy measurement, respectively. (*See* Ans. 5, middle to bottom and 6, bottom to 7, top.)

FN4. *See* n.3.

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