

NOTE: This disposition is nonprecedential.

**United States Court of Appeals  
for the Federal Circuit**

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**IN RE: VICTOR GORELIK,**  
*Appellant*

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2016-1602

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Appeal from the United States Patent and Trademark  
Office, Patent Trial and Appeal Board in No. 12/825,505.

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Decided: August 9, 2016

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VICTOR GORELIK, Brooklyn, NY, pro se.

THOMAS W. KRAUSE, Office of the Solicitor, United  
States Patent and Trademark Office, Alexandria, VA, for  
appellee Michelle K. Lee. Also represented by MAI-TRANG  
DUC DANG, MEREDITH HOPE SCHOENFELD.

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Before PROST, *Chief Judge*, REYNA, and HUGHES, *Cir-  
cuit Judges*.

PER CURIAM.

Victor Gorelik appeals from the Patent Trial and  
Appeal Board's ("Board") decision that the currently-  
pending claims in U.S. Patent Application Serial No.  
12/825,505 (the "505 application") are unpatentable as

obvious under 35 U.S.C. § 103. *Ex Parte Gorelik*, No. 2013-000522, 2015 WL 6122390 (P.T.A.B. Oct. 15, 2015) (“*Board Op.*”). For the reasons below, we *affirm* the Board’s decision with respect to claims 1 and 4 and *reverse* the Board’s decision with respect to claim 3.

#### BACKGROUND

##### U.S. Patent Application Serial No. 12/825,505

The ’505 application is entitled “Method, Language, and System for Parallel Algorithmic Trading and Overseeing Trading Activity.” It describes methods and software systems for high-frequency trading that “significantly enhance[] the ability of a trader to trade a wide set of financial instruments simultaneously and also allow[] market regulators to implement effective trading supervision.” ’505 application, J.A. 21, [0003]. The specification describes spreading the processing of market information across multiple coprocessors that work in parallel so that decisions can be made, and trades executed, more quickly. *Id.* at J.A. 23–25, [0013]–[0024].

The two claims disputed on appeal are claims 1 and 3.<sup>1</sup> Claim 1 as amended requires:

A method for parallel algorithmic trading and overseeing trading activity, running on a central processor and on a number of general processor cores, comprising:

- 1.1) identifying a list of financial instruments for parallel calculations;

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<sup>1</sup> Mr. Gorelik did not contest the Examiner’s rejection of claim 4 under 35 U.S.C. § 112 before the Board, and the Board summarily affirmed. *Board Op.*, 2015 WL 6122390, at \*2. He does not contest this decision in this appeal and we, therefore, *affirm*.

- 1.2) identifying a list of financial instruments for reference calculations;
- 1.3) determining a union of the list (1.1) and the list (1.2);
- 1.4) receiving a set of market data messages through the central processor;
- 1.5) extracting trading and quote information from the set (1.4) into data series corresponding to the financial instruments of the union (1.3) by using, in parallel, a number of general processor cores that is preferably equal to the number of messages in the set (1.4);
- 1.6) formulating an algorithm for processing the data series (1.5);
- 1.7) generating buy/sell/cancel orders according to the algorithm (1.6) by using, in parallel, a number of general processor cores that is preferably equal to the number of financial instruments in the list (1.1);
- 1.8) sending through the central processor the orders (1.7) to order entry gateways;
- 1.9) receiving through the central processor signals confirming execution or cancellation of the orders (1.7);
- 1.10) using the signals (1.9) along with the data series (1.5) as inputs for the algorithm (1.6); [and]
- 1.11) updating the results of calculations of the steps (1.5) and (1.7) on receiving each new set of messages (1.4).

J.A. 3.

Dependent claim 3 as amended requires: “The method of claim 1 where inputs of the algorithm (1.6) include the data series (1.5) that are specific for particular market makers.” J.A. 182.

### The Applied Prior Art

Two prior art references are at issue, U.S. Patent No. 7,613,647 (“Cushing”) and U.S. Patent No. 7,840,482 (“Singla”).

Cushing describes a system using multiple networked servers where each server “is programmed with a specific trading strategy algorithm and receives trade orders and executes them according to the trading strategy algorithm programmed therein.” Cushing col. 1 ll. 48–54. All of the servers are networked together and all servers have “access to real-time and historical market data” for use in making trades. *Id.* at col. 2 ll. 5–6. One of the pieces of market data used in Cushing is the Volume Weighted Average Price of a stock, discussed below. *Id.* at col. 3 ll. 18–39.

Singla describes a system for high-frequency options trading that is configured to “accelerat[e] the speed by which option pricing models can be used to evaluate option prices.” Singla col. 4 ll. 55–56. In order to increase processing speed, Singla uses “a plurality of parallel computation modules . . . to compute each term in parallel, thereby accelerating the overall computation of the option’s theoretical fair market price.” *Id.* at col. 8 ll. 17–20.

### Procedural History

The ’505 application was filed on June 29, 2010. The Examiner issued a Final Office Action rejecting all pending claims on March 13, 2012. Mr. Gorelik appealed. On October 15, 2015, the Board affirmed the Examiner’s rejection of all pending claims as obvious over the combination of Cushing in view of Singla. *Board Op.*, 2015 WL 6122390, at \*4. Gorelik appeals. We have jurisdiction under 28 U.S.C. § 1295(a)(4)(A).

## STANDARD OF REVIEW

We review the Board's ultimate legal determination of obviousness *de novo*; however, we review the Board's underlying findings of fact for substantial evidence. *In re Kahn*, 441 F.3d 977, 985 (Fed. Cir. 2006). A claimed invention is unpatentable if the differences between it and the prior art are such that the claimed subject matter as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art. 35 U.S.C. § 103 (2006). In determining obviousness, we look to whether the combined teachings of the references would have suggested combining all elements of the claimed invention to one of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

## DISCUSSION

Claim 1 is obvious.

Mr. Gorelik raises two arguments against the Board's conclusion that claim 1 is obvious over Cushing in view of Singla.

First, he argues that claim 1 requires "data parallelism," where multiple processors execute the *same* task, instead of the "task parallelism" taught by Singla, where multiple processors execute *different* tasks. Gorelik Br. 4. This data/task parallelism terminology is not used in the '505 application, but Mr. Gorelik argues claim 1 is limited to data parallelism because of step 1.1's requirement to "identify[] a list of financial instruments for parallel calculations," step 1.5's requirement that a "data series correspond[] to the financial instruments," and step 1.7's requirement of "using, in parallel, a number of general processor cores" to process the data series. '505 application, cl. 1, J.A. 3; *see also* Gorelik Br. 4. We do not find this argument persuasive.

The Board determined that claim 1 does not limit what is processed in parallel such that a single task must

be performed simultaneously by multiple coprocessors. J.A. 6. We agree. Step 1.7 simply requires “using, in parallel, a number of general processor cores” to “generat[e] buy/sell/cancel orders according to” an algorithm for processing the data series. This language does not exclude using multiple processors on different tasks so long as processors are used in parallel to make trading decisions based on a data series.

Second, Mr. Gorelik argues that the prior art combination cannot render claim 1 obvious because it requires that “all data processing is performed on the [general processor cores] without any exchange with the CPU.” Gorelik Br. 5. He argues that a skilled artisan would understand “the update on step 1.11 is just a simple repetition of steps 1.5 and 1.7 on the mentioned general processor cores (i.e., on the GPU) without any exchanges with the CPU.” *Id.* at 7. We disagree.

The Board correctly concluded that claim 1 is obvious over the combination of Cushing in view of Singla. Claim 1 uses the non-limiting transitional phrase “comprising,” which creates a presumption that the method is not limited to only those steps recited in the claim. *See Crystal Semiconductor Corp. v. TriTech Microelectronics Int’l, Inc.*, 246 F.3d 1336, 1348 (Fed. Cir. 2001). Mr. Gorelik relies only on the claim language, but the claims do not limit interchange between the general processor cores and the CPU. Hence, even if Mr. Gorelik is correct that the update of step 1.11 is merely a repetition of prior steps, those steps do not exclude interchange with the CPU.

Claim 3 is not obvious over Cushing in view of Singla.

Mr. Gorelik argues that the Board was incorrect that Cushing’s disclosure of trading based on Volume Weighted Average Price (“VWAP”) meets claim 3’s limitation that “inputs of the algorithm (1.6) include the data

series (1.5) that are specific for particular market makers.” J.A. 182; *see also* Gorelik Br. 8–10. We agree.

The ’505 application explains that “any input data series for Algorithm 113 can be specified for each market maker individually.” ’505 application, J.A. 35, [0064]. In contrast, Cushing explains that a “stock’s VWAP is the average price of the trades of the stock over the course of the day weighted according to the number of shares traded at each price.” Cushing col. 3 ll. 28. Notably absent from the determination of VWAP under Cushing is any limitation of the data set used to determine VWAP to any particular market makers. Instead, VWAP is general, anonymized market information that is not tied to any particular market makers and that does not include any information about who made the underlying trades. Thus, the use of VWAP as an input for making trading decisions in Cushing does not provide a data series that is “specific for particular market makers” as required by claim 3. The Board’s finding that the use of VWAP as in Cushing teaches the relevant limitation of claim 3 is not supported by substantial evidence. We accordingly *reverse* the Board’s determination that claim 3 is obvious over Cushing in view of Singla.

#### CONCLUSION

For the above reasons, the Board’s determinations that claims 1 and 4 of the ’505 application are unpatentable are *affirmed* and its determination that claim 3 is unpatentable as obvious over the combination of Cushing and Singla is *reversed*.

#### **AFFIRMED IN PART AND REVERSED IN PART**

#### COSTS

No costs.