

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 31

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* JAMES A. KAHLE and DONALD E. WALDECKER

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Appeal No. 1997-0562  
Application No. 08/255,130

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ON BRIEF

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Before THOMAS, BARRETT, and DIXON, **Administrative Patent Judges**.  
DIXON, **Administrative Patent Judge**.

**DECISION ON APPEAL**

This is a decision on appeal from the examiner's final rejection of claims 1, 3-6 and 8-10, which are all of the claims pending in this application.

We REVERSE.

## **BACKGROUND**

The appellants' invention relates to a method and system for nonsequential instruction dispatch and execution in a superscalar processor system. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A method for enhanced instruction dispatch efficiency in a superscalar processor system which can fetch an application specified ordered sequence of scalar instructions and simultaneously dispatch a group of said scalar instructions to a plurality of execution units, said method comprising the steps of:

dispatching selected ones of said group of scalar instructions to selected ones of said plurality of execution units on an opportunistic basis;

nonsequentially executing selected ones of said group of scalar instructions within said plurality of execution units;

storing results of execution of each of said dispatched scalar instructions in intermediate storage buffers within said superscalar processor system;

maintaining an indication of completion of execution of each of said dispatched scalar instructions in a separate completion buffer; and

controlling the transferring of results of execution of selected ones of said dispatched scalar instructions from said intermediate storage buffers to selected general purpose registers in an order consistent with said application specified ordered sequence in response to said maintained indication of completion of execution of said selected ones of said dispatched scalar instructions within said separate completion buffer.

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The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Torng	4,807,115	Feb. 21, 1989
Kinney et al. (Kinney)	5,193,158	Mar. 09, 1993 (Filed Oct. 18, 1991)
Hobbs et al. (Hobbs)	5,197,138	Mar. 23, 1993 (Filed Dec. 26, 1989)
Guenthner et al. (Guenthner)	EP-0 106 670	Apr. 25, 1984

Claims 1 and 6 stand rejected under 35 U.S.C. § 103 as being unpatentable over Torng in view of Guenthner. Claims 3-5 and 8-10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Torng and Guenthner in view of Kinney and Hobbs.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellants regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 29, mailed Jul. 22, 1996) for the examiner's reasoning in support of the rejections, and to the appellants' brief (Paper No. 28, filed Jun. 24, 1996) for the appellants' arguments thereagainst.

## OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellants' specification and claims, to the applied prior art references, and to the respective positions articulated by the appellants and the examiner. As a consequence of our review, we make the determinations which follow.

When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the appellants. Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. The extent to which such suggestion must be explicit in, or may be fairly inferred from the references, is decided on the facts of each case, in light of the prior art and its relationship to the appellants' invention. As in all determinations under 35 U.S.C.

§ 103, the decision maker must bring judgment to bear. It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the appellants' structure as a template and selecting elements from references to fill the gaps. The references themselves must provide some teaching whereby the appellants' combination would have been obvious. **In re Gorman**, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991) (citations omitted). That is, something in the prior art as a

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whole must suggest the desirability, and thus the obviousness, of making the combination.

**See In re Beattie**, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992);

**Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Co.**, 730 F.2d

1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984). In determining

obviousness/nonobviousness, an invention must be considered "as a whole,"

35 U.S.C. § 103, and claims must be considered in their entirety. **Medtronic, Inc. v.**

**Cardiac Pacemakers, Inc.**, 721 F.2d 1563, 1567, 220 USPQ 97, 101 (Fed. Cir. 1983).

Since the limitations that

maintaining an indication of completion of execution of each of said dispatched scalar instructions in a separate completion buffer; and controlling the transferring of results of execution of selected ones of said dispatched scalar instructions from said intermediate storage buffers to selected general purpose registers in an order consistent with said application specified ordered sequence in response to said maintained indication of completion of execution of said selected ones of said dispatched scalar instructions within said separate completion buffer

are not clearly taught or fairly suggested by the combination of Torng and Guentner, we

will not sustain the rejection of independent claims 1 and 6.

Appellants argue that Torng does not maintain an indication of completion of execution of each of said dispatched scalar instructions as the examiner maintains on page 3 of the answer. (See brief at page 6.) We agree with appellants. The examiner responds by maintaining that Guentner is relied upon to teach the separate completion buffer without further response. (See answer at page 6.)

Appellants argue that Guenther does not teach or suggest the nonsequential execution of scalar instructions. (See brief at pages 8-9.) We agree with appellants. While there is some inherent order required in Guenther to maintain proper order in the results, the operation thereof is generally sequential in nature wherein the distributor dispatches the instructions in sequence to the various processing units which process these instructions in the order which they are received. We find no need in Guenther for maintaining a separate completion buffer for maintaining indications of completion of nonsequential instructions. The examiner maintains that various units in Guenther teach the claimed “maintaining an indication of completion of execution of each of said dispatched scalar instructions in a separate completion buffer; and controlling the transferring of results of execution” limitations based upon the fact the stored results would provide the needed indication of completion. (See answer at pages 4 and 7.) While we generally agree that the fact that the results are present in the results stack would be an indication of the completion of a respective instruction, in our view, this does not fairly suggest to skilled artisans the use of the claimed separate completion buffer to facilitate transfer of results “to selected general purpose registers in

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an order consistent with said application specified ordered sequence in response to said maintained indication of completion of execution of said selected ones of said dispatched scalar instructions within said separate completion buffer” after nonsequential execution of instructions.

Appellants argue that the combination of Torng and Guentner would not teach or fairly suggest the claimed completion buffer and transfer of results as recited in claims 1 and 6. (See brief at page 9.) We agree with appellants. Therefore, we will not sustain the rejection of independent claims 1 and 6.

With respect to the rejection of dependent claims 3-5 and 8-10, the examiner relies upon the teaching of Kinney and Hobbs to teach the additional limitations, but the examiner does not rely upon the teachings of Kinney and Hobbs to teach or suggest those limitations that are lacking in the combination of Torng and Guentner. From our review of Kinney and Hobbs, we find that they do not remedy the deficiencies in the base combination of teachings. Therefore, we will not sustain the rejection of claims 3-5 and 8-10.

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**CONCLUSION**

To summarize, the decision of the examiner to reject claims 1, 3-6 and 8-10 under 35 U.S.C. § 103 is reversed.

**REVERSED**

JAMES D. THOMAS	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
LEE E. BARRETT	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
JOSEPH L. DIXON	)	
Administrative Patent Judge	)	

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APPLICATION NO. 08/255,130

APJ DIXON

APJ THOMAS

APJ BARRETT

DECISION: **REVERSED**

Prepared By: **LETICIA PIHULIC**

**DRAFT TYPED:** 23 Apr 01

**FINAL TYPED:**