The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 26

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte SURACHAI SUTHA and DAN T. LONG

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Appeal No. 1998-1110
Application No. 08/391,263

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ON BRIEF

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Before JERRY SMITH, FLEMING, and LALL, Administrative Patent Judges.

FLEMING, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-10, all of the claims pending in the present application.

The invention relates to a device and method for image compression and/or expansion using a parallel processor. A single instruction multiple datastream (SIMD) machine such as a Geometric Arithmetic Parallel Processor (GAPP)(Specification, pages 8-12), having a plurality of substantially identical cells for processing digital data signals (Specification, page 5, line 28) is used as a first means for parallel aggregation of selected ones of a first plurality of picture elements into first aggregates which each include a copy of more than one of the picture elements (Specification, page 18, line 29 to page 19, line 5; Figure 13). The GAPP then functions as a second means for parallel aggregation of the first aggregates into second aggregates, each of which includes a copy of more than one first aggregate (Specification, page 19, lines 3-8; Figure 13, note especially the transitions from Fig. 13(b) to Fig. 13(c), Fig. 13(c) to Fig. 13(d), etc.).

Independent claim 1 is reproduced as follows:

1. A device for transforming a first representation of an information pattern made up of a plurality of picture elements into a second representation of the information pattern, the

device comprising:

first means for parallel aggregation of selected ones of said plurality of picture elements into first aggregates, wherein each of said first aggregates includes a copy of more than one of said picture elements; and

second means for parallel aggregation of said first aggregates into second aggregates, wherein each second aggregate includes a copy of more than one of said first aggregates.

The Examiner relies on the following references:

Nickerson et al. 5,119,323 Jun. 2, 1992
Daher 5,327,254 Jul. 5, 1994

Adams et al.; "The Manipulation of Raster-Based Topographic Data on a Parallel Processor"; Proceedings of IEEE Computer Society Conference on Pattern Recognition and Image Processing, PRIP-82 (Jun. 17, 1982); pp. 396-404

Claims 1-5 and 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Nickerson et al. in view of Adams et al. and Daher. The Examiner's Answer contains no rejection of claims 6 and 7. The rejection of those claims contained in the Final Rejection is therefore considered withdrawn by the Examiner and not before the Board.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the brief and answer for the respective details thereof.

OPINION

We will not sustain the rejection of claims 1-5 and 8-10 under 35 U.S.C. § 103(a).

The Examiner has failed to set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been led to the claimed invention by the express teachings or suggestions found in the prior art, or by implications contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983). "Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention." ***Para-Ordnance Mfg. v. SGS Importers Int'l, Inc.***, 73 F.3d 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995), ***cert. denied,*** 117 S.Ct. 80 (1996) ***citing W. L. Gore & Assocs., Inc. v. Garlock, Inc.***, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***cert. denied***, 469 U.S. 851 (1984).

On pages 6 through 12 of the brief, Appellants argue that Nickerson et al., Daher, and Adams et al. fail to teach

Appellants' claimed limitations. In particular, Appellants argue that Nickerson et al. fails to teach compression or decompression of *picture elements*, as claimed in claims 1-5 and 8-10. Appellants further argue that Nickerson et al. fails to teach *parallel aggregation*, rather than averaging, of data elements, as claimed in claims 1, 2, 4, and 8-10 (or parallel *separation* in the case of image decompression, as claimed in claims 3 and 5). Appellants argue that Daher and Adams et al. fail to teach the concept of parallel aggregation assertedly missing from Nickerson et al., as claimed in claims 1-5 and 8-10. Finally, Appellants argue that the Examiner improperly relied on unsubstantiated conclusions to establish a *prima facie* case of obviousness.

In the answer, the Examiner argues at pages 8-9 that the prior art teaches the claimed method and that the combination of Nickerson et al., Daher, and Adams et al. is proper. In particular, the Examiner asserts on page 8 that although Nickerson et al. does not teach compressing image data, i.e. picture elements, or parallel aggregation rather than averaging, the Daher reference teaches "the row and column

wise compression of image data . . . where a copy of one or more original picture elements is maintained in the first compression means." The Examiner asserts that Appellants' disclosure teaches the conventional nature of subsets containing data items that are identical to items in the set from which the subset is formed.

As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." ***In re Hiniker Co.***, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998).

Turning first to Appellants' claim 1, we note that the claim recites a device for transforming a first representation of an

information pattern made up of a plurality of picture elements into a second representation of the information pattern, the device comprising: first means for **parallel aggregation** of selected ones of the picture elements into first aggregates, each first aggregate including a **copy** of **more than one** of the picture elements; and second means for **parallel aggregation** of the first aggregates into second aggregates, these second

aggregates including a **copy** of **more than one** of the first aggregates. (Emphasis added). Appellant discloses at page 5, lines 27 to 29 that "[t]he first and second mechanisms for parallel aggregation . . . include a parallel data processor having a plurality of substantially identical cells for processing digital data signals." Appellant discloses at page 18, last line, to page 19, line 7 that "[t]he actual implementation for compressing 32 rows of image data into 16 rows begins with concurrent construction of 16 subimages, each containing one row as shown in Fig. 13(b). The process continues with concurrent construction of multiple subimages, each containing 2 rows and then 4 rows and then 8 rows, as shown in Figs. 13(c)-(e), respectively. As the number of rows in each subimage increases, the number of the subimages decreases, until the process results in only one subimage, as shown in Fig. 13(f)."

Thus, the claimed "first aggregate" may be seen, for example, in Fig. 13(c) as comprising the set of picture elements {2,4}, or {6,8}, etc. Such a "first aggregate" includes a copy of more than one of the picture elements, e.g.

"2" and "4." Following that example of a first aggregate, the claimed "second aggregate" may be seen, for example, in Fig. 13(d) as comprising the set of picture elements {2,4,6,8}, or {10,12,14,16}, etc. Such a "second aggregate" includes a copy of more than one of the first aggregates, e.g. "24" and "68."

Upon a careful review of Nickerson et al., Daher, and Adams et al., we fail to find that these references teach or suggest "parallel aggregation" as the term is defined by Appellants, whether it be aggregation of a copy of more than one picture element into a "first aggregate," or aggregation of a copy of more than one "first aggregate" into a "second aggregate." We agree with the Examiner that Nickerson et al. teaches transforming a first representation of an information pattern into a second representation of the information pattern. We agree with the Examiner that Daher teaches row and column wise compression of image data where a copy of one or more original picture elements is maintained in the "first compression means." We agree with the Examiner that Adams et al. teaches the compression of image data in a parallel manner. We fail to find, however, that any reference teaches parallel aggregation of picture elements or prior aggregates

in such a fashion that the new aggregate includes a copy of more than one (*i.e.*, at least two) picture element or prior aggregate, respectively.

Nickerson et al. teaches at column 4, lines 14-32 averaging four neighboring data values to obtain a new value that is moved to a new position, and discarding the old values. The Examiner concedes that Nickerson et al. does not disclose parallel aggregation.

Daher teaches at column 8, lines 3-21 image compression where a copy of one or more picture elements is maintained in the compressed version of the image. Specifically, Daher teaches "selecting at least one row from the image data 12 for inclusion in the resized image data 22, and means 52b for selecting at least one pixel 14 within each selected row for inclusion in the resized image data 22." Read in combination with Figure 4, this language arguably teaches aggregation of picture elements into first aggregates. Daher certainly contains no teaching, however, of second means for parallel aggregation, with second aggregates each including a copy of more than one first aggregate.

Adams et al. teaches image compression by parallel processing, but otherwise fails to teach the limitations of the claim. The Adams et al. compression method is discussed at page 400, left column, second paragraph: "[t]he rows are shifted one position north and tested using an inclusive 'OR' with the original image (figure 5b) and then the columns are shifted west one position and tested with an inclusive 'OR' with the original image." The "OR" function proposed by Adams would certainly result in the alteration in value of picture elements, which fails to satisfy the claim limitation that "copies" of plural picture elements are aggregated.

Thus, we fail to find that the combination proposed by the Examiner would have resulted in the claimed invention.

Appellants' independent claims 2, 4, 8, 9, and 10 contain limitations parallel to those contained in claim 1, *i.e.*, parallel aggregation of selected picture elements into first aggregates which include a copy of more than one picture element, followed by aggregation of those first aggregates into second aggregates which each include a copy of more than one first aggregate. Therefore, we find that the prior art

relied upon by

the Examiner fails to teach these limitations, for the same reasons specified with respect to claim 1.

Claims 3 and 5 recite the reverse process, a method for image **expansion**, including first and second parallel separation into first and second aggregates or "subsets," each aggregate or subset including copies of fewer picture elements than the "representation" or prior aggregate being expanded to form it. The prior art relied upon by the Examiner teaches decompression by processes inverse to those used for compression. Thus, none of the references relied upon teach parallel separation into second aggregates or subsets, each including copies of fewer picture elements than each of the first aggregates or subsets. We therefore fail to find that the combination proposed by the Examiner would have resulted in the invention claimed in claims 2-5 and 8-10.

The Federal Circuit states that "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the

prior art suggested the desirability of the modification." ***In re Fritch***, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), ***citing In re Gordon***, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). "Obviousness may not be established using hindsight or in view of the teachings or suggestions of the inventor." ***Para-Ordnance***, 73 F.3d at 1087, 37 USPQ2d at 1239, ***citing W. L. Gore & Assocs.***, 721 F.2d 1551, 1553, 220 USPQ 311, 312-13.

Upon a review of the references relied upon by the Examiner, we fail to find any suggestion or reason to aggregate a set of first aggregates into second aggregates, wherein each second aggregate includes a copy of more than one first aggregate. At most, the Daher reference would have motivated the person having ordinary skill in the art to perform a single step of aggregating a plurality of picture elements into a first aggregate. None of the other references relied upon by the Examiner suggest the desirability of performing a second aggregation. The Examiner has failed to respond to Appellants' challenge of his taking official notice that Nickerson et al.'s data compression scheme is equivalent

to parallel aggregation; therefore, we cannot sustain the Examiner's assertion that such equivalence would have been within the level of ordinary skill in the art. Whether or not the Examiner is correct that "image data compression can be thought of as simply a field of use of the compression of data as seen in Nickerson [et al.]," the references relied upon fail to teach (at minimum) the claimed aggregation into second

aggregates. Therefore, we will not sustain the rejection of claims 1-5 and 8-10 under 35 U.S.C. § 103(a) as being unpatentable over Nickerson et al., Daher, and Adams et al.

Accordingly, the Examiner's decision is reversed.

REVERSED

JERRY SMITH Administrative Patent Judge	)	
MICHAEL R. FLEMING Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES

PARSHOTAM S. LALL)
Administrative Patent Judge)

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