

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SEMYON BERKOVICH,
EFRAIM BERKOVICH, and
MURRAY H. LOEW

Appeal No. 1997-1636
Application No. 08/204,996¹

ON BRIEF

Before JERRY SMITH, BARRETT, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection of claims 1-14. We affirm-in-part.

¹ The application was filed on March 3, 1994.

BACKGROUND

The invention at issue in this appeal is a multi-processor computer architecture for the uninterrupted processing of a voluminous flow of data. The architecture comprises substantially identical processing layers. The layers feature dual-port microprocessors. Each microprocessor is connected to its layer's bus by one port and to the next layer's bus or an output bus by the other port. Each layer also includes a supervisory microprocessor. The supervisory processor is connected to its layer's bus by one of its ports and to a supervisory bus by the other port.

Claim 1, which is representative for our purposes, follows:

1. A multi-processor computing system comprising:
 - a plurality of layers, each layer comprising at least three dual ported processors,
 - a plurality of busses, each bus supervised by a supervisory processor;
 - one of said plurality of busses constituting an input bus to processors of a first layer and another

of said plurality of busses constituting an output bus,
one port of each processor of the first layer connected to said input bus,
one port of each processor of a last layer connected to said output bus,
and one or more intermediate busses connected to one port of processors of a preceding layer and one port of processors of a succeeding layer;
wherein incoming data can be allocated to processors of a first layer and transferred sequentially to processors of subsequent layers for processing.

The references relied on in rejecting the claims follow:

Berlin, Jr. (Berlin)	4,428,048	Jan. 24, 1984
Nogi 1985	4,514,807	Apr. 30,
Anderson et al. (Anderson)	4,958,273	Sept. 18, 1990
Lawton 1992.	5,109,356	Apr. 28,

Claims 1-3, 5, 8, 9, 12, and 14 stand rejected under 35 U.S.C. § 103 as obvious over Lawton in view of Nogi. (Paper 13 at 2.) Claim 4 stands rejected under 35 U.S.C. § 103 as obvious over Lawton in view of Nogi further in view of Berlin. (Id. at 4.) Claims 6 and 7 stand rejected under 35 U.S.C. § 103 as obvious over Lawton in view of Nogi further in view of Anderson. (Id. at 4-5.) Claim 11 stands rejected under 35 U.S.C. § 103 as obvious "for the reasons set forth in the

rejection of claims 1-10" (Id. at 6.) Claim 13 stands rejected under 35 U.S.C. § 103 as obvious over Lawton in view of Anderson. (Id. at 5.) Rather than repeat the arguments of the appellants or examiner in

toto, we refer the reader to the brief and answer for the respective details thereof.

OPINION

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejections and evidence advanced by the examiner. Furthermore, we duly considered the arguments of the appellants and examiner. After considering the totality of the record, we are not persuaded that the examiner erred in rejecting claims 1-13. We are persuaded, however, that the examiner erred in rejecting claim 14. Accordingly, we affirm-in-part. Our opinion addresses the grouping and obviousness of the claims.

Grouping of the Claims

37 C.F.R. § 1.192(c)(7), as amended at 60 Fed. Reg. 14518 (Mar. 17, 1995), was controlling when the appeal brief was filed. Section 1.192(c)(7) stated as follows.

For each ground of rejection which appellant contests and which applies to a group of two or more claims, the Board shall select a single claim from the group and shall decide the appeal as to the ground of rejection on the basis of that claim alone

unless a statement is included that the claims of the group do not stand or fall together and, in the argument under paragraph (c)(8) of this section, appellant explains why the claims of the group are believed to be separately patentable. Merely pointing out differences in what the claims cover is not an argument as to why the claims are separately patentable.

In addition, claims that are not argued separately stand or fall together. In re Kaslow, 707 F.2d 1366, 1376, 217 USPQ 1089, 1096 (Fed. Cir. 1983). When the patentability of dependent claims in particular is not argued separately, the claims stand or fall with the claims from which they depend. In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

The appellants state that the claims should be considered in the following groups for the appeal: claims 1-3, claim 4, claims 6 and 7, claim 11, claim 13, and claim 14. (Appeal Br. at 5.) Conversely, the appellants omit a statement that claims 1-3, 5, and 8-10 do not stand or fall together; a statement that claims 11 and 12 do not stand or fall together; and reasons why claims 2-3, 5, 8-10, and 12 are separately

patentable. Therefore, we consider the claims to stand or fall together in the following groups:

- claims 1-3, 5, and 8-10
- claim 4
- claims 6 and 7
- claims 11 and 12
- claim 13
- claim 14.

We also consider claims 1, 4, 6, 11, 13, and 14, as representative of the respective groups. Next, we address the obviousness of the claims.

Obviousness of the Claims

We begin our consideration of the obviousness of the claims by finding that the references represent the level of ordinary skill in the art. See In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interference did not err in concluding that the level of ordinary skill in the art was best determined by the references of record); In re Oelrich, 579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("[T]he PTO usually must evaluate ... the level of ordinary skill solely on the cold words of the literature."). Of course, every

patent application and reference relies on the knowledge of persons skilled in the art to complement its disclosure. In re Bode, 550 F.2d 656, 660, 193 USPQ 12, 16 (CCPA 1977). Such persons must be presumed to know something about the art apart from what the references teach. In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). We address the obviousness of claims 1-3, 5, and 8-10; claim 4; claims 6 and 7; claims 11 and 12; claim 13; and claim 14.

Claims 1-3, 5, and 8-10

The appellants make three arguments regarding claims 1-3, 5, and 8-10. We address these seriatim.

First, the appellants argue, "the references do not disclose 'a plurality of layers, each layer comprising at least three dual ported processors.'" (Appeal Br. at 8.) The examiner replies, "Lawton discloses a multi-processor system comprising a plurality of layers (fig. 1, items 10), having at least three dual ported processors per layer (fig 2 items 36 & 38)." (Examiner's Answer at 6.) We agree with the examiner.

Lawton teaches a two-dimensional array 5 of processing cells 10, each denoted in Figure 1 by the letter "P." Col. 3, ll. 20-22. Either the columns or the rows of the array would have suggested the "plurality of layers" as claimed. Figure 1 shows that each row or column includes at least six of the processing cells. Each cell has interconnections with its four neighboring cells. Id. at ll. 22-26. Specifically, Figure 2 shows a Western connection 32, an Eastern connection 34, a Northern connection 36, and a Southern connection 38 for each cell. These processing cells with their interconnections would have suggested the "dual ported processors" as claimed.

Second, the appellants argue, "The references do not describe 'a plurality of busses, each bus supervised by a supervisory processor' with the processors connected to the busses as set forth in the claim." (Appeal Br. at 8.) The examiner replies, "Lawton discloses a plurality of lines, each having a supervisory processor" (Examiner's Answer at 6.) She adds, "Nogi does show the processors interconnected by busses" (Id.) We agree with the examiner.

The appellants err in considering the references individually. "Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references." In re Merck & Co., 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986) (citing In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981)). In determining obviousness, furthermore, references are read not in isolation but for what they fairly teach in combination with the prior art as a whole. Id., 231 USPQ at 380. Here, the rejection is based on the combination of Lawton and Nogi. As aforementioned, Lawton teaches a plurality of interconnections. Each interconnection is supervised by a data transfer cell 12. Col. 3, ll. 30-40. As shown in Figures 1 and 2, Nogi uses busses as interconnections between processors. When the busses taught by Nogi are used to interconnect the processing cells taught by Lawton, the resulting combination would have suggested the "plurality of busses, each bus supervised by a supervisory processor" and the processors connected to the busses as claimed.

Third, the appellants argue, "the references do not permit layer-to-layer transfer. Therefore, the references do not meet the limitation of claim 1 that 'incoming data can be allocated to processors of a first layer and transferred sequentially to processors of subsequent layers for processing.'" (Appeal Br. at 8.) The examiner replies, "Lawton teaches that control of informational data may be transferred from a processor to another processor" (Examiner's Answer at 7.) We agree with the examiner.

The appellants err in considering the references in less than their entirety. A reference must be considered as a whole for what it reveals "to workers in the art." Panduit Corp. v. Dennison Mfg. Co., 810 F.2d 1561, 1566, 1 USPQ2d 1593, 1595 (Fed. Cir. 1987). Here, it is unclear on which portion of Lawton the appellants focus. The reference, however, teaches much more. Specifically, it teaches the loading of data "into the first column of the processor elements 10 (processing block 205)." Col. 7, ll. 36-38. It also teaches "the transfer of data ... between interconnecting cells," col. 3, ll. 44-45;

"transfers between neighboring cells," col. 4, l. 7; and the transfer of "data from the West cell to the East cell, or vice versa" Id. at ll. 38-41. These transfers would have suggested that "incoming data can be allocated to processors of a first layer and transferred sequentially to processors of subsequent layers for processing" as claimed.

For the foregoing reasons, the examiner has established a prima facie case of obviousness. Therefore, we affirm the examiner's rejection of claims 1-3, 5, and 8-10. Next, we address the obviousness of claim 4.

Claim 4

Regarding claim 4, the appellants note, "the Berlin reference is utilized by the Examiner to show a teaching 'that the output data can be directed to the input (Fig. 3).'" (Appeal Br. at 10.) They do not contest the teaching, but argue, "The Examiner does not explain how the Berlin reference would be incorporated into the combination of Lawton and Nogi

...." (Id.) The examiner replies, "It would have been obvious ... to provide for the output data to be directed to the input, because it would allow for faster processing of recursive or repetitive loop functions." (Examiner's Answer at 8.) We agree with the examiner.

The appellants err in considering the prior art in less than its entirety. As aforementioned, every reference relies on the knowledge of persons skilled in the art to complement its disclosure. Bode, 550 F.2d at 660, 193 USPQ at 16. Such persons must be presumed to know something about the art apart from what the references teach. Jacoby, 309 F.2d at 516, 135 USPQ at 319.

Berlin does in fact teach that a daisy strobe signal propagates from one daisy unit 28 to a next daisy unit 28. Col. 6, ll. 36-38. When the last, i.e., the rightmost, unit outputs the signal, the signal is directed back to the input of the first, i.e., the leftmost, unit. Fig. 3. Official

notice is taken, moreover, that directing output data to an input to provide feedback was old and well known in the art of control systems at the time the invention was made. At that time, it would have been obvious to a person having ordinary skill in the art to interconnect the output of one of Lawton's processing cells to an input of another processing cell so that the output data can be selectively directed to the other processing cell as claimed. The motivation to do so would have been to use the results of past calculations in future calculations.

For the foregoing reasons, the examiner has established a prima facie case of obviousness. Therefore, we affirm the examiner's rejection of claim 4. Next, we address the obviousness of claims 6 and 7.

Obviousness of Claims 6 and 7

Regarding claims 6 and 7, the appellants argue, "Although Anderson et al. may show switching control of the operating

state of one processor to the other processor on occurrence of a failure in the first processor, and then resuming processing, there is no hint or suggestion in Anderson et al. that this can be applied to more than two processors."

(Appeal Br. at 10-11.) The examiner replies, "Anderson does teach transferring the operating state of a processor to a subsequent processor for processing from the point transfer (Col. 1 lines 61-65)." (Examiner's Answer at 8.) She adds, "It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide for transferring the operating state of a processor to a subsequent processor for processing from the point transfer, since it was known in the art that it allows for the data input to be the cycle time of the processor to provide faster processing of complicated data" (Id.) We agree with the examiner but also find the teaching of Anderson to be cumulative in view of Lawton.

Claim 6 specifies in pertinent part the following limitations: "the operating state of a processor of one layer is transferred as required to a processor of a subsequent

layer for continuation of processing." Lawton teaches, "transfers between neighboring cells so that the cells may perform operations which are functions of the status of their neighbors" Col. 4, ll. 7-9. The reference further teaches that the transfers involve the delivery of both "control data" and "information data." Id. at 4, ll. 35-38. These teachings would have suggested the transfer of "the operating state of a processor of one layer ... to a processor of a subsequent layer for continuation of processing" as claimed.

For the foregoing reasons, the examiner has established a prima facie case of obviousness. Therefore, we affirm the examiner's rejection of claims 6 and 7. Next, we address the obviousness of claims 11 and 12.

Claims 11 and 12

The appellants make two arguments regarding claims 11 and 12. We address these seriatim.

First, the appellants state, "claim 11 includes features of claims 1-10 in a combination which is different from any of the combinations set forth in claims 1-10." (Appeal Br. at 11.) The pages of the appeal brief that precede this statement contain a multiplicity of arguments regarding claims 1-10. It is unclear to which of these arguments, if any, the appellants refer. Furthermore, we have rejected the arguments.

Second, the appellants argue, "the combination of even two references is untenable and there is even less rationale for combining four references unless it is solely for the purpose of meeting the claim through hindsight." (Appeal Br. at 12.) The examiner replies, "the number of references does not have a bearing on the propriety of the rejection" (Examiner's Answer at 8.) We agree with the examiner.

The appellants err in focussing on the number of references. Reliance on a large number of references in a rejection does not of itself weigh against the combination thereof. In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885,

1888 (Fed. Cir. 1991) (affirming a rejection based on thirteen references). In fact, the number of references that may be combined is theoretically infinite. Ex parte Fine, 1927 Dec. Comm'r Pats. 84, 86 (Comm'r Pats. 1927). The appellants have not shown error in the rejection. Therefore, we affirm the rejection of claims 11 and 12. Next, we address the obviousness of claim 13.

Claim 13

Regarding claim 13, the appellants note, "Independent claim 13 describes a method of operating the architecture of claim 1 and transferring the operating states of each processor to a corresponding processor of subsequent layers across the entire array of processors." (Appeal Br. at 11.) They argue, "As discussed above, none of the references teach this." (Id.)

The pages of the appeal brief that precede the argument contain a multiplicity of arguments. It is unclear to which of these arguments the appellants refer. Furthermore, we have rejected many of the arguments. The appellants have not shown

error in the rejection. Therefore, we affirm the rejection of claim 13. Next and last, we address the obviousness of claim 14.

Claim 14

Regarding claim 14, the appellants argue, "claim 14 is a *fortiori* patentable because neither Lawton or [sic] Nogi discuss [sic] the loading of blocks of data . . . in duplicate" (Appeal Br. at 9.) The examiner replies, "Lawton discloses . . . loading incoming data sequentially" (Paper 13 at 4.) We agree with the appellants.

Claim 14 specifies in pertinent part the following limitation: "loading to each of said respective processors a copy of a block of data which duplicates a block of data loaded into another processor." The examiner fails to show a teaching or suggestion of this limitation in the prior art. Although Lawton teaches "[a] sequence of operations, including transfer between neighboring cells . . .," col. 4, ll. 6-7, the reference does not teach loading duplicate data. Nogi does not cure this deficiency.

For the foregoing reasons, the examiner has not established a prima facie case of obviousness. Therefore, we reverse the rejection of claim 14.

We end our consideration of the obviousness of the claims by noting that the aforementioned affirmances are based only on the arguments made in the brief. Arguments not raised in the brief are not before us, are not at issue, and are thus considered waived.

CONCLUSION

To summarize, the examiner's rejection of claims 1-13 under 35 U.S.C. § 103 is affirmed. Her rejection of claim 14 under 35 U.S.C. § 103 is reversed.

No period for taking subsequent action concerning this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

JERRY SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
LEE E. BARRETT)	APPEALS
Administrative Patent Judge)	AND
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LANCE LEONARD BARRY)	
Administrative Patent Judge)	

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McDERMOTT, WILL & EMERY
600 13 STREET, N.W.
WASHINGTON, DC 20005