

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte ROY Y. TAYLOR and  
ROGER A. MORTON

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Appeal No. 95-4722  
Application 07/946,226<sup>1</sup>

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ON BRIEF

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

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

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<sup>1</sup> Application for patent filed September 16, 1992.

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This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-24, which constitute all the claims in the application. An amendment after final rejection was filed on December 21, 1994 and was entered by the examiner. This amendment overcame a rejection of the claims under the second paragraph of 35 U.S.C. § 112 [Advisory Action, Paper #15].

The claimed invention pertains to a method and apparatus for producing a depth image of a scene based on a plurality of two-dimensional views of the scene. Specifically, the depth image is created by processing the apparent viewing positions of the various two-dimensional views in a manner which changes the apparent viewing positions of these views.

Representative claim 1 is reproduced as follows:

1. A method of producing a depth image, comprising the steps of:

(a) capturing views of a scene from various positions using convergent perspective axis imagers producing apparent viewing positions;

(b) processing the views changing the apparent viewing positions; and

(c) creating the depth image from the views.

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The examiner relies on the following references:

Wah Lo	4,800,407	Jan. 24, 1989
Hiraoka	4,870,600	Sep. 26, 1989
Travis	5,132,839	July 21, 1992

Claims 1-24 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Wah Lo in view of Travis with respect to claims 1-17 and 21-24, and Hiraoka in view of Travis with respect to claims 18-20.

Rather than repeat the arguments of appellants or the examiner, we make reference to the brief and the answer for the respective details thereof.

#### OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the brief along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

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It is our view, after consideration of the record before us, that the collective evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1-24. Accordingly, we reverse.

We consider first the rejection of claims 1-17 and 21-24 under 35 U.S.C. § 103 as unpatentable over Wah Lo in view of Travis. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. Rudkin-Wiley

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Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.),  
cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta  
Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657,  
664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS  
Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572,  
1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by  
the examiner are an essential part of complying with the  
burden of presenting a prima facie case of obviousness. Note  
In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed.  
Cir. 1992).

For each of the independent claims subject to this  
rejection, the examiner has presented a similar rationale in  
formulating the rejection. More particularly, the examiner's  
rejection takes the position that Wah Lo teaches the claimed  
method and apparatus for producing a depth image except for  
the step of creating views between the captured views. The  
examiner views this function as being met by the process of  
interpolating between captured views. The examiner cites  
Travis as a teaching that interpolation can be used to  
generate additional pictures if desired. The examiner  
concludes that it would have been obvious to the artisan to

use the interpolation teachings of Travis with the image capture system of Wah Lo [answer, pages 4-17]. Although each of the independent claims recites a variation on the manner in which apparent image positions are changed, each of the independent claims recites the property that the apparent viewing positions of the captured views are changed.

Although appellants argue each of the claims separately, there are some arguments which apply to all the claims subject to this rejection. First, appellants argue that the broad reference to interpolation in Travis is unrelated to the creation of a depth image so that the artisan would not have used this reference as a basis to modify the teachings of Wah Lo to include interpolation [brief, pages 9-11]. Second, appellants argue that Travis provides no guidance as to how interpolation should be applied to a lenticular projection system [brief, pages 11-12]. Third, appellants argue that the broad concept of interpolation as suggested by Travis would not meet the requirement of the invention that the entire apparent position be changed. According to appellants, the changed viewing positions of the claims requires that both the physical position be changed and

that the perspective axis of the view be changed. This result is not accomplished by the simple interpolation of captured values according to appellants [brief, pages 12-14].

Based on the record established in this case, we agree with appellants that the teachings of Wah Lo and Travis do not collectively suggest the invention of claims 1-17 and 21-24. Wah Lo has nothing to do with changing apparent viewing positions in creating a depth image. Rather, Wah Lo teaches that a depth image on a lenticular photograph should have precisely three image bands under a lenticular screen of approximately thirty degrees [column 4, lines 34-37]. The three image bands result from a picture taken of a scene through three different lenses. The apparent viewing position of each view is established by the fixed relationship between the lenses. Wah Lo does nothing in creating the photograph to change these apparent viewing positions [note that the apparent viewing positions remain unchanged in going from FIG. 6 to FIG. 7]. Whatever the apparent viewing position is in Wah Lo when the image is captured is retained in producing the lenticular photograph.

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Wah Lo does absolutely no processing of the captured images. In addition, Wah Lo also suggests that an increased number of captured images would be undesirable [column 2, lines 19-48]. An interpolated view in Wah Lo would be equivalent to having placed a lens at that same perspective axis on the camera. In other words, interpolated views would be the same as capturing additional original views in the first place. But Wah Lo specifically teaches against providing any more than three images because the eye will then focus on non-adjacent images which is not desirable. Therefore, interpolated views between the three captured views in Wah Lo would present the very problems which Wah Lo is trying to eliminate. The artisan would have absolutely no motivation to attempt to change the apparent viewing positions of the captured views in Wah Lo.

We also agree with appellants that the mere mention of interpolation in Travis would not justify using interpolation in Wah Lo. The examiner's position is tantamount to holding that since interpolation was known in the art, it would have been obvious to use it. The examiner's position also assumes that interpolation would always be a desirable thing to do.

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The examiner's rejection fails to consider the claimed invention as a whole and fails to ascertain whether the artisan would have been motivated to use interpolation in the Wah Lo device.

Since we are of the view that the artisan would have no motivation to use Travis' broad interpolation suggestion in the Wah Lo depth image producing device, we conclude that the invention recited in each of the claims on appeal would not have been obvious within the meaning of 35 U.S.C. § 103 in view of the teachings of Wah Lo and Travis. Therefore, we do not sustain the rejection of any of claims 1-17 and 21-24.

We now consider the rejection of claims 18-20 as unpatentable over the teachings of Hiraoka in view of Travis. For each of these claims, the examiner's rejection takes the position that Hiraoka implicitly teaches specific recitations of the claims. That is, with respect to claim 18, the examiner asserts that "Hiraoka implicitly teaches identifying a volume with the greatest number of image edges and shifting the perspective of the views to rotate around the volume" [answer, page 17]. With respect to claims 19 and 20, the examiner asserts that "Hiraoka implicitly teaches shifting the

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apparent viewing positions" [answer, page 18]. The examiner again determines that the main reference (Hiraoka) teaches all the features of the claimed invention except for creating views between the captured views. The examiner again cites Travis as providing the teaching that interpolation can be used to provide additional images if desired. The examiner concludes that it would have been obvious to use the Travis interpolation suggestion in the Hiraoka device [answer, page 18].

Appellants argue that Hiraoka does not implicitly teach the specific recitations of claims 18-20, and the examiner has not identified any specific passage of Hiraoka which teaches the steps recited in claim 18, steps (b) and (c), claim 19, steps (b)-(e), and claim 20, steps (b) and (c)[brief, pages 21-23]. We agree with appellants' arguments with respect to each of claims 18-20. We are unable to find the teachings the examiner asserts are implicit in Hiraoka. There appears to be no reason why the specific recitations of claims 18-20 must implicitly be carried out by Hiraoka. The examiner's position represents a conclusion which is not supported by the applied prior art. Therefore, the examiner

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has failed to establish a prima facie case of the obviousness of claims 18-20. Accordingly, we do not sustain the rejection of claims 18-20.

In summary, we have not sustained either of the examiner's rejections of the claims on appeal. Therefore, the decision of the examiner rejecting claims 1-24 is reversed.

REVERSED

	)	
JAMES D. THOMAS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
JERRY SMITH	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
LEE E. BARRETT	)	)
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