

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(2) is not binding precedent of the Board.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. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte CHRISTOPHER J. LEBEAU

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Appeal No. 97-2706  
Application 08/340,946<sup>1</sup>

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ON BRIEF

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Before HAIRSTON, TORCZON, and CARMICHAEL, Administrative  
Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 14

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<sup>1</sup> Application for patent filed November 17, 1994.  
According to applicant, the application is a division of  
Application 08/100,829, filed August 2, 1993.

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through 17.

The disclosed invention relates to a method of detecting a defect in an object.

Claim 14 is the only independent claim on appeal, and it reads as follows:

14. A method of detecting a defect in an object comprising:

forming a grey scale image of the object wherein the grey scale image has a major axis;

forming a shifted image of the grey scale image by shifting the grey scale image along the major axis; and

comparing the shifted image to the grey scale image to detect the defect.

The reference relied on by the examiner is:

Gonzales et al. (Gonzales), "Digital Image Processing," Addison-Wesley, 1987, pages 47, 48 and 100 through 111.

Claims 14 through 17 stand rejected under the first paragraph of 35 U.S.C. § 112 because:

3. The term "major axis" is in fact present in the specification but it is not defined. Specification. page 8, lines 25-27:

...shifting the duplicate image a distance 52 along a major axis of images 41, 42, and 43.

No explanation is made as to how "axes" are determined (eg, axis of symmetry?) and thus there are an infinite number of them. No axes are shown

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or labeled in the drawings. Also, the language "a major axis" indicates that there may be more than one major axis. Which axes are "major"? How many axes are "major"?

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Claims 14 and 15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Gonzales.

Claims 16 and 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Gonzales.

Reference is made to the brief and the answer for the respective positions of the appellant and the examiner.

#### OPINION

We have carefully considered the entire record before us, and we will reverse all of the rejections.

In a discussion of a shifted grey scale image, appellant explains (specification, pages 8 and 9) that:

Referring to FIG. 7, a comparison image 45 is formed by duplicating image 40 (FIG. 6) and shifting the duplicate image a distance 52 along a major axis of images 41, 42, and 43. This forms a shifted image that includes shifted element images 62, 63, and 64 that represent images 41, 42, and 43 as shifted by distance 52. As shown in FIG. 7, image 40 (FIG. 6) is overlaid with the shifted image to illustrate distance 52. Defects 44, 46, 47, 49, and 51 shown in FIG. 6 are represented by shifted defects 54, 56, 57, 59, and 61 respectively. After shifting, images 62, 63, and 64 are compared to images 41, 42, and 43 in order to identify the defects.

The distance between defect 44 (Figures 6 and 7) and shifted defect 54 (Figure 7), for example, is the distance 52

along the side of shifted element image 62. Thus, it is clear from the quoted excerpt from appellant's disclosure that the disclosed and claimed "major axis" is through the lengthwise extent of each of shifted element images 62, 63 and 64. The rejection of claims 14 through 17 under the first paragraph of 35 U.S.C. § 112 is reversed because the examiner has not presented well-founded reasons for rejecting the claims.

Turning to the 35 U.S.C. § 102(b) rejection of claims 14 and 15, appellant argues (Brief, page 7) that:

The Examiner has argued that forming a gray scale image is inherently described in Gonzales, but even if this is so, it is only shown on page 47 of Gonzales. The Examiner has not at all demonstrated a connection between the alleged description of forming a shifted image and the requirement of claim 14 that the shifted image be derived from a gray scale image. Instead, any mention of a gray scale image is in a different section of Gonzales. Further, the Examiner has not provided any support as to why the deriving of a shifted image from a gray scale image must necessarily occur in the mathematical operations described in Gonzales.

Again, claim 14 recites a step of comparing the shifted image to the gray scale image. As discussed above, there is no connection described in Gonzales between any inherent gray scale image and a shifted image of it. Further, page 111, lines 10-20, of Gonzales does not identically describe a gray scale image and does not inherently require that correlation be performed on a gray scale image. Therefore, the step of comparing an image to a gray

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scale image is not identically described and is thus not anticipated by Gonzales.

We agree. Gonzales is concerned with gray-level shading in image processing (pages 47 and 48), and indicates that "relationships, called *convolution* and *correlation*, are of fundamental importance to an understanding of image processing techniques based on the Fourier transform" (page 100). The remainder of the publication discusses convolution and correlation strictly in terms of mathematics. In summary, the 35 U.S.C. § 102(b) rejection of claims 14 and 15 is reversed because Gonzales does not disclose any of the steps of the claimed method.

The 35 U.S.C. § 103 rejection of claims 16 and 17 is reversed for the same reason.

#### DECISION

The decision of the examiner rejecting claims 14 through 17 under the first paragraph of 35 U.S.C. § 112 is reversed. The decision of the examiner rejecting claims 14 and 15 under

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35 U.S.C. § 102(b) is reversed, and the decision of the  
examiner rejecting claims 16 and 17 under 35 U.S.C. § 103 is  
reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
RICHARD TORCZON	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
	)	
	)	
JAMES T. CARMICHAEL	)	
Administrative Patent Judge	)	

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