

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. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD H. BENEAR and JAMES R. NOTTINGHAM

Appeal No. 2001-1337
Application No. 08/864,944

ON BRIEF

Before JERRY SMITH, LALL, and GROSS, Administrative Patent Judges.
LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-4 and 6-20. Claim 5 has been canceled.

According to Appellants (brief at page 2 and 3), the disclosed invention is directed to a method and apparatus which enhances a color raster image in a printer by identifying a working pixel in the raster image for anti-aliasing (edge smoothing), and then modifying luminance data of the working pixel in a luminance chrominance color space such that an anti-

aliasing effect is achieved relative to the raster image. The luminance component of the raster image data is converted to a binary format to identify the working pixel using template matching. Luminance data of the working pixel is modified by utilizing luminance data of adjacent pixels to produce a new luminance value which is then assigned to the working pixel. In the event chroma data is associated with the object, the chroma data is combined with the modified luminance data and also assigned to the working pixel. Importantly, the present invention enables a multi-bit per pixel color imaging device to anti-alias a raster image using a luminance chrominance color space and binary template matching.

The following claim further illustrates the invention.

12. A method of anti-aliasing an edge of an object in a raster image, the raster image being represented by multi-bit per pixel data, the method comprising the steps of:

(a) thresholding a pure luminance only component of the multi-bit per pixel data to obtain a copy representation of the raster image in a binary data format;

(b) identifying a working pixel in the binary data for anti-aliasing with respect to the edge of the object;

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(c) modifying the pure luminance only component of the working pixel, the pure luminance only component being defined in the multi-bit per pixel data; and,

(d) assigning the modified pure luminance only component and assigning chroma data, if any, of the object to the multi-bit per pixel data of the working pixel thereby producing an anti-aliasing effect for the working pixel relative to the object.

The Examiner relies on the following references:

Mutz	5,561,721	Oct. 01, 1996
Ryan et al. (Ryan)	5,844,988	Dec. 01, 1998
		(filing date Mar. 08, 1995)

Appellants' admitted prior art

Claims 1-4, 6-8, 11 and 13-18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mutz in view of the admitted prior art.

Claims 9, 10, 12, 19 and 20 stand rejected under 35 U.S.C. § 103 as being unpatentable over Mutz in view of the admitted prior art and Ryan.

Rather than repeat the arguments of Appellants and the Examiner, we make reference to the brief (paper no. 15) and the Examiner's answer (paper no. 16) for the respective details thereof.

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OPINION

We have considered the rejections advanced by the Examiner and the supporting arguments. We have, likewise, reviewed the Appellants' arguments set forth in the brief.

We reverse.

REJECTION UNDER 35 U.S.C. § 103

As a general proposition, in an appeal involving a rejection under 35 U.S.C. § 103, an examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness, is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

We take claim 1, the independent method claim which is broader than claim 12, for our analysis. The Examiner asserts (answer at page 3) that "[i]t would have been obvious . . . to have modified Mutz to have included the method step for

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converting luminance data (Y) of the multi-bit per pixel raster image to binary data per pixel and identifying a working pixel from the binary data taught by applicant's admitted prior art,"

Appellants argue (brief at page 6) that

there is no teaching or suggestion as to modifying the **luminance** component. Nor is there any teaching or suggestion as to what **color space** is applicable for implementation. This is critical because simply modifying **any color component in any color space** presents significant color problems in the resultant output image. For example, if the pixel data is in an RGB color space, and only one of these *color* components is modified (i.e., either R, G or B), incorrect hue shifts inevitably occur in the resultant output image.

Appellants further argue (id. at page 8) that

[a]pplicants acknowledge that thresholding procedure 46 [figure 2 of disclosure] *alone* is known in the art, however, its *applicability to thresholding a pure luminance only component (Y)*⁴⁴ as described and claimed in this invention is not taught or even suggested in Applicants' Specification as admitted prior art, nor is it taught or suggest[ed] in any of the cited art, alone or in combination.

The Examiner responds (answer at page 9) that "Mutz teaches [that] brightness of multi-bit raster image is converted to binary rendering (2 levels) (col. 1, lines 16-17), the brightness in here is a pure luminance or a Y component in luminance

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chrominance color space. And Mutz clearly teach[es] a modified pure luminance component assigned back to the working pixel”

The Examiner also responds (id. at page 10) that “the purpose of the Thresholding procedure 46 [Appellants’ disclosure Fig. 2] is that [it] converts a pure luminance component of pixels. Thus, any pure luminance data including Y would be converted by the Thresholding procedure.”

We disagree with the Examiner’s position. We do not find, nor does the Examiner point out, where in Mutz is the conversion occurring from an RGB color space to luminance chrominance color space. Claim 1 requires the first step of converting to binary data per pixel the luminance (Y) component in the luminance chrominance color space while leaving the other component such as chrominance unchanged. So, even if the Thresholding which is part of the method claim 1 is admitted to be old, the above initial step of converting is not shown by the combination of the references suggested by the Examiner. Therefore, we do not sustain the rejection of claim 1 over Mutz in view of the admitted prior art. Since the other independent claims, 12 and 13 also contain the same or similar limitations as claim 1, their rejection over Mutz and the admitted prior art is also not sustainable. The rejection of the dependent claims 2-4, 6-11 and 14-20 also falls with the rejection of the independent claims.

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The decision of the Examiner rejecting claims 1-4 and 6-20
under 35 U.S.C. § 103 is reversed.

REVERSED

JERRY SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
PARSHOTAM S. LALL)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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