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HSV-To-RGB Mapping and Color Models (Part 2 Of 2)

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TOPIC ----------

This is the second of a two-part article on HSV-to-RGB mapping and color models.

DISCUSSION ----------

Converting from RGB to HSV or HIS

When converting HSV to RGB, the HSV model always has at least one RGB value equalling the intensity or value of the HSV model color.

When converting HSV to RGB, the HSV model sets the value parameter to the largest RGB value.

When converting RGB to HSL/HIS, the HSL model always sets the luminance or intensity parameter to equal the midrange of the RGB values.

The hue values for the HSV model always equal the hue values from the HSL model.

References

"Raster Graphics Handbook" Conrac Division, Conrac Corporation Van Nostrand Reinhold Company Inc. 135 West 50th Street New York, New York 10020

"Fundamentals of Interactive Computer Graphics" James D. Foley, Andries Van Dam, Addison-Wesley Publishing Company Menlo Park, CA

For the HSL model (also called HIS), both books use "Status Report of the Graphics Standards Committee," Computer Graphics volume 13, number 3, Association for Computing Machinery, New York, August, 1979.

The HSL model provided in both books is based on the SIGGRAPH article. There is a typographical error in the calculation for converting from RGB to HSL. This error appears in the article and is replicated in the books.

The correct calculation for color saturation from red, green, and blue values is:

```
If luminance <=.5 then
   saturation := (max - min) / (max + min)
else
   saturation := (max-min) / (2 - min - max)
```

Apple Computer uses the corrected calculation in its Color Picker Package.

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