

Production for Designers

Session Six: March 9, 2020

Print Update:

<https://www.wideformatimpressions.com/article/printed-electronics-is-the-technology-of-tomorrow/>

Review Session Five:

Color Management



Today's Agenda:

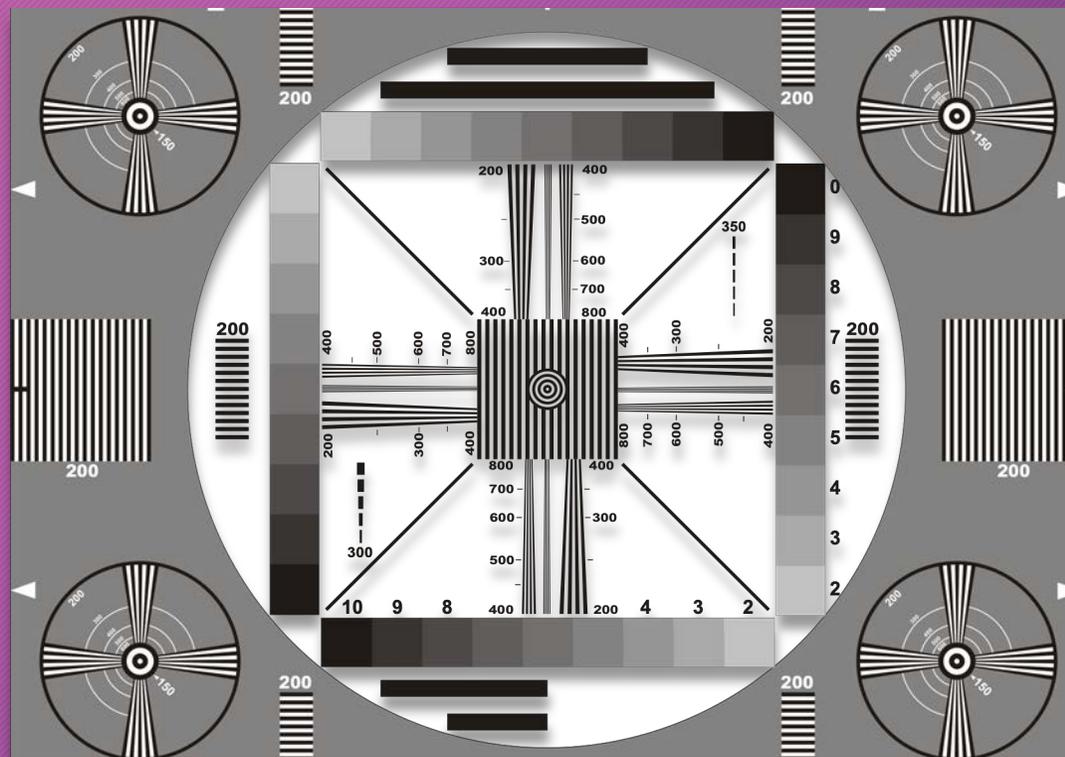
Color

Color Management

Color and Printing

Color Proofing

What is this?



Color - What is this?



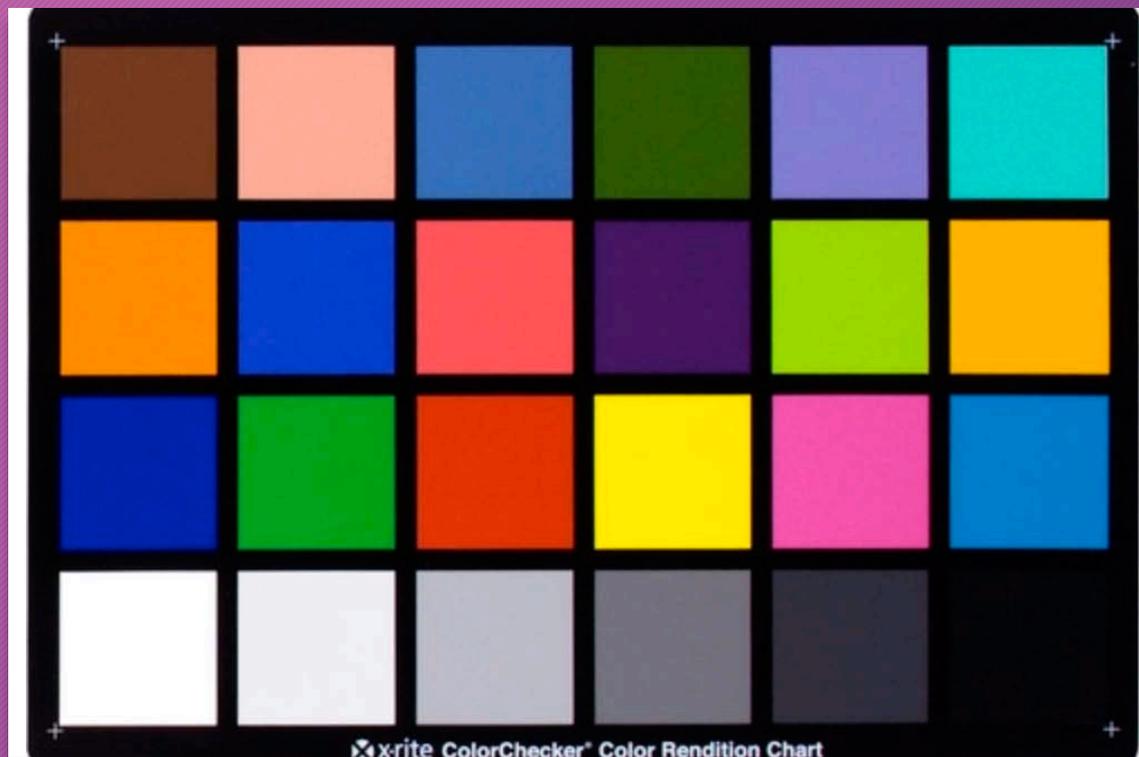
Color - What is this?

<https://www.youtube.com/watch?v=id7UDBscYyU>

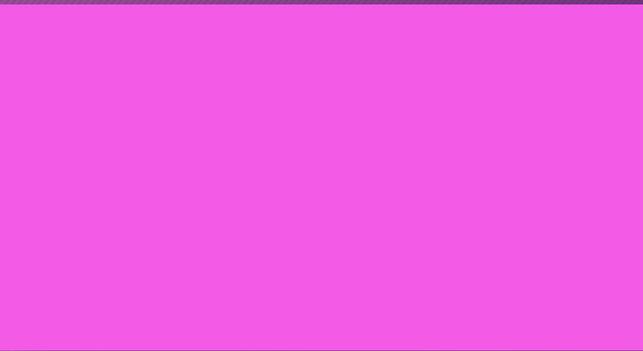
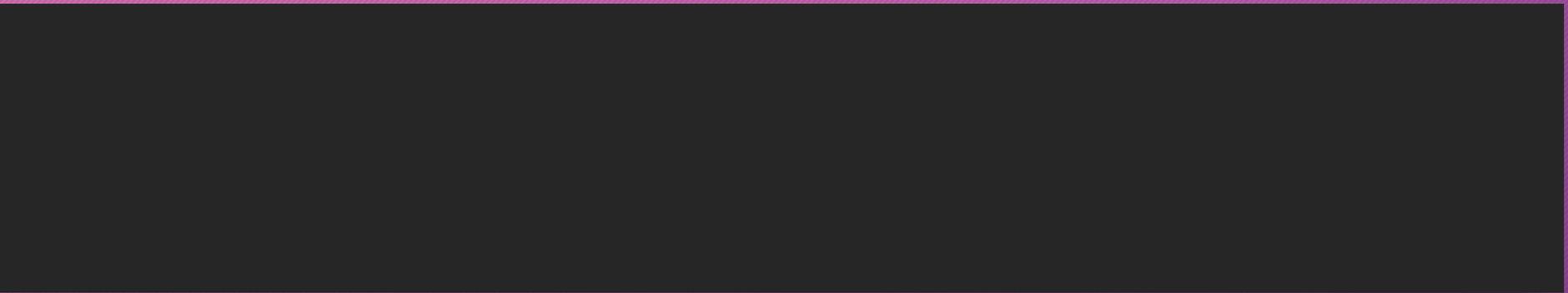
Color - What is this?



Color - What is this?



What is Color?



Printing - Standards and Specifications

What is a printing standard?

<http://the-print-guide.blogspot.com/2011/10/printing-standards-and-specifications.html>

Printing - Standards and Specifications

What is a printing specification?

Printing Specifications

Industry Related Standards

Printing Specifications

Industry Related Standards

<https://www.idealliance.org/swop>

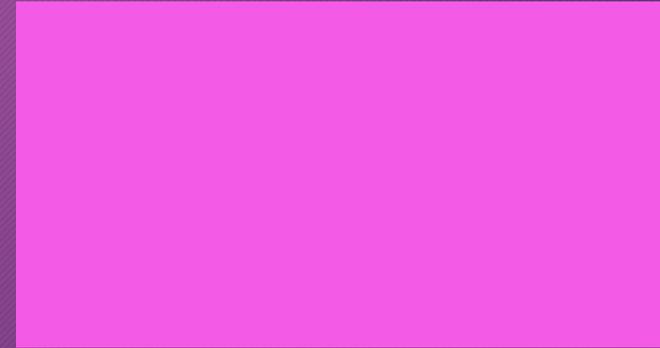
<http://www.explorebigsky.com/wp-content/uploads/2014/01/SNAP-Quality-Guidelines1.pdf>

<https://www.idealliance.org/g7spec>

Color!

Perception, theory and use!

What is light?



What is light?

Simply, light is a name for a range of electromagnetic radiation that can be seen by the human eye.

What is light?



Image: Courtesy Pantone

What is light?

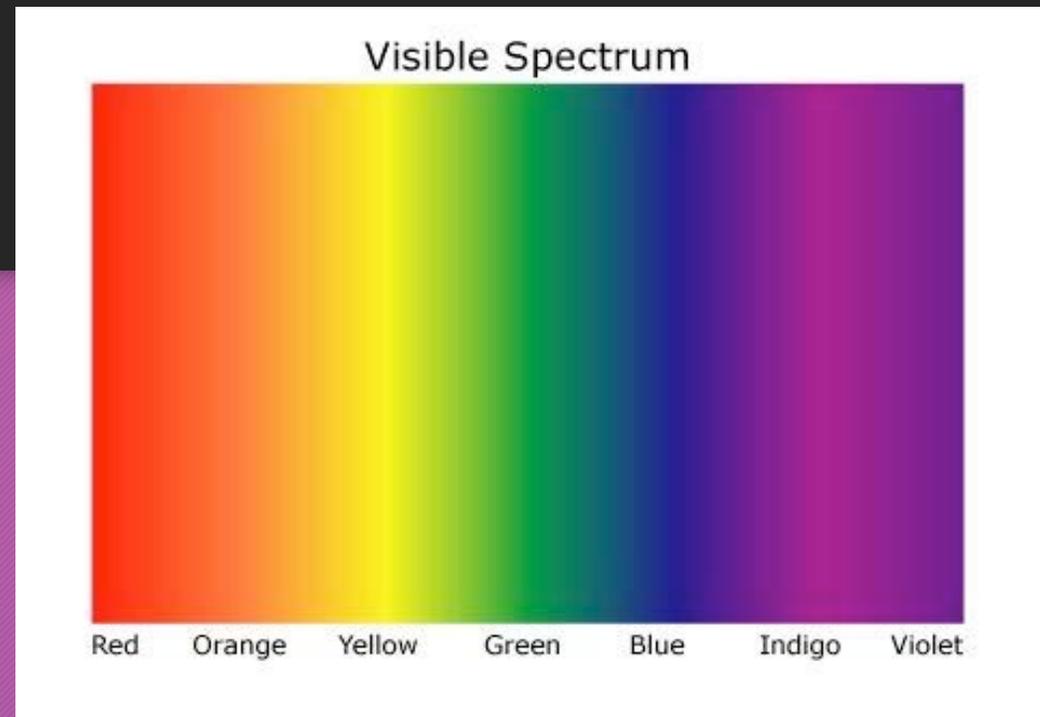


Image: Google Images

What is light?

Light is only one part of the electromagnetic spectrum including radio, microwave, infrared, visible, ultraviolet, x-ray and gamma rays.

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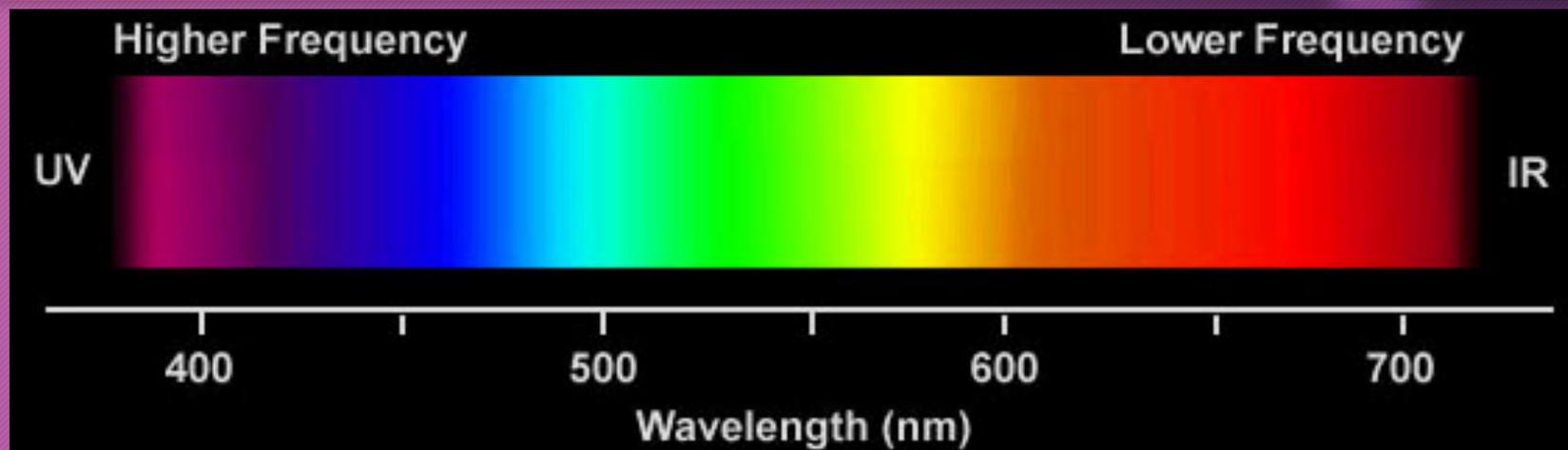
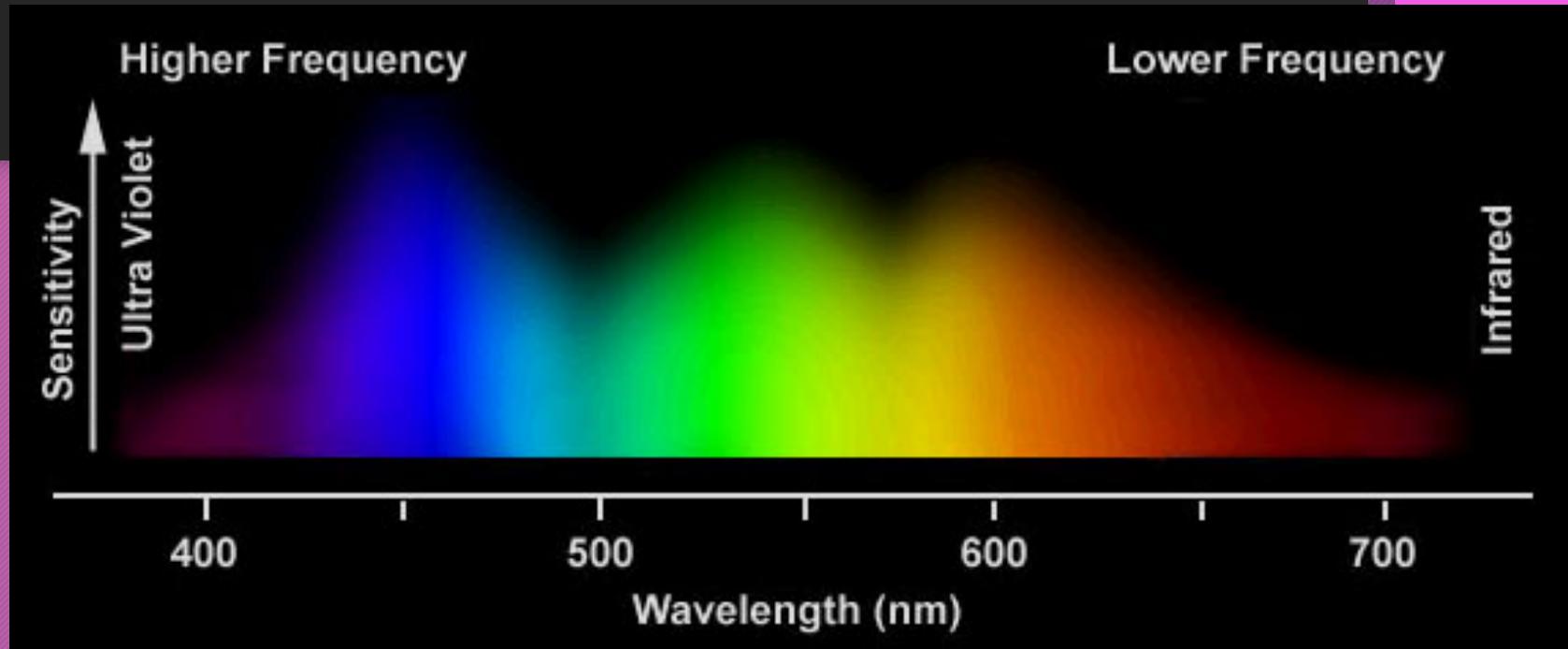


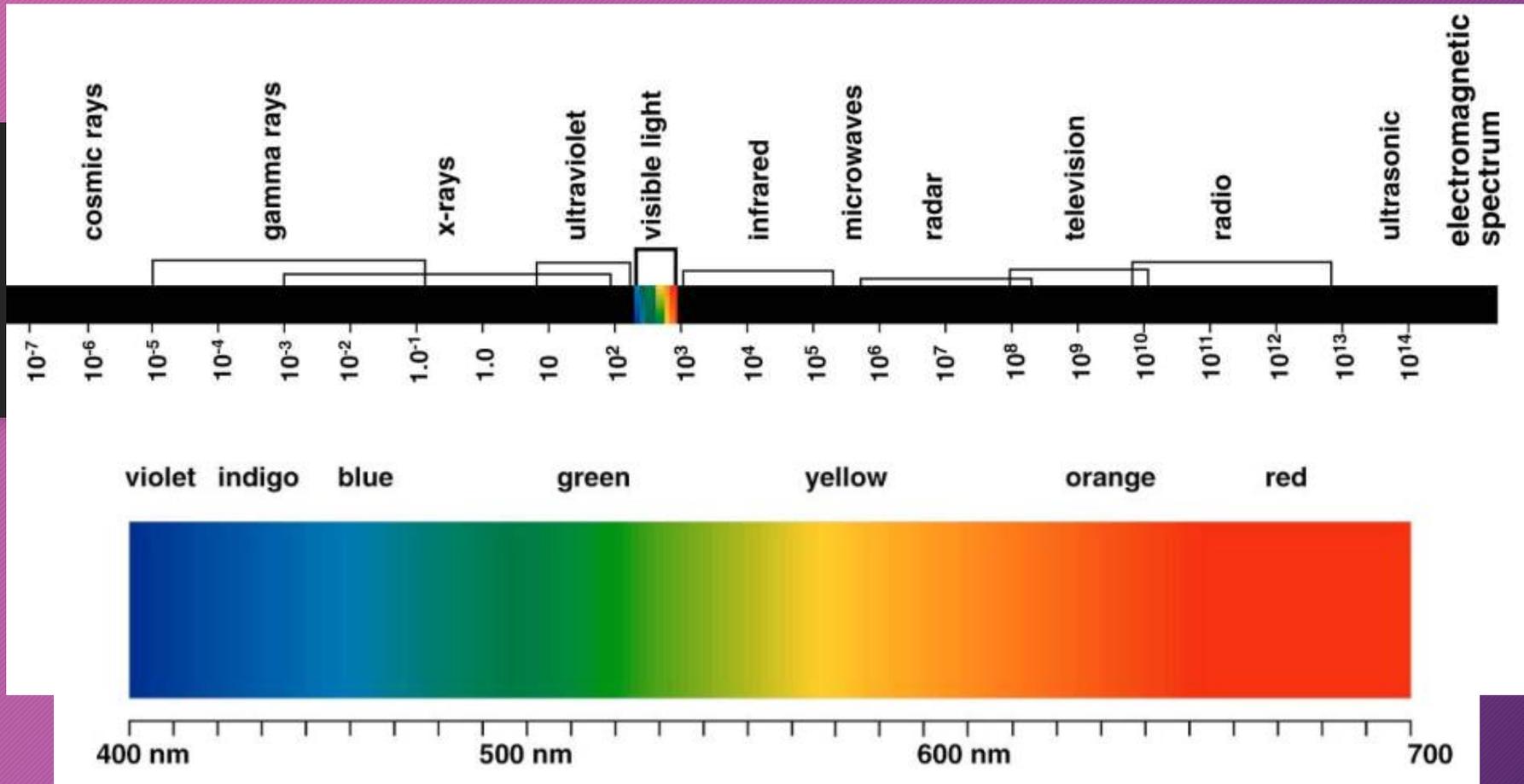
Image: Courtesy Pantone

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Light is only one part of the electromagnetic spectrum including radio, microwave, infrared, visible, ultraviolet, x-ray and gamma rays.



What is light?



What is color?

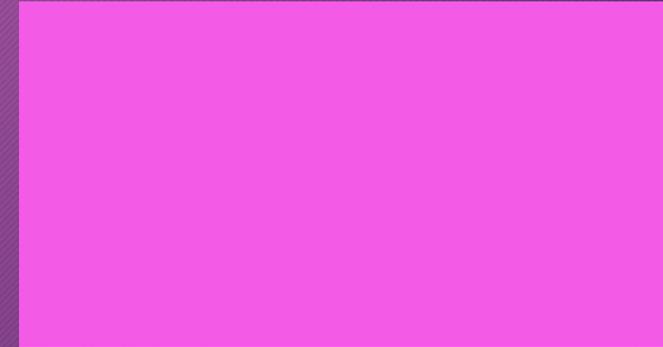
Color, is the visual perception, a human perception that allows us to “view” the categories called red, blue, yellow, green and others.



Image: Courtesy Pantone

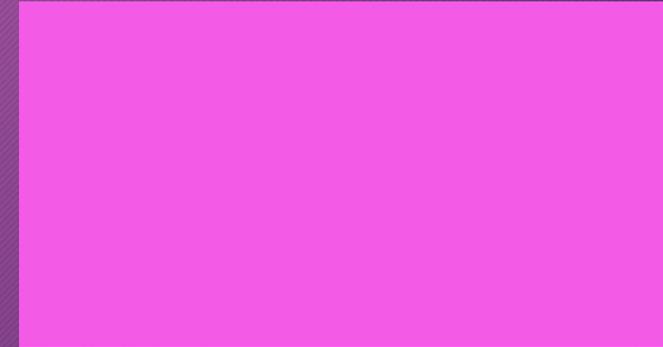
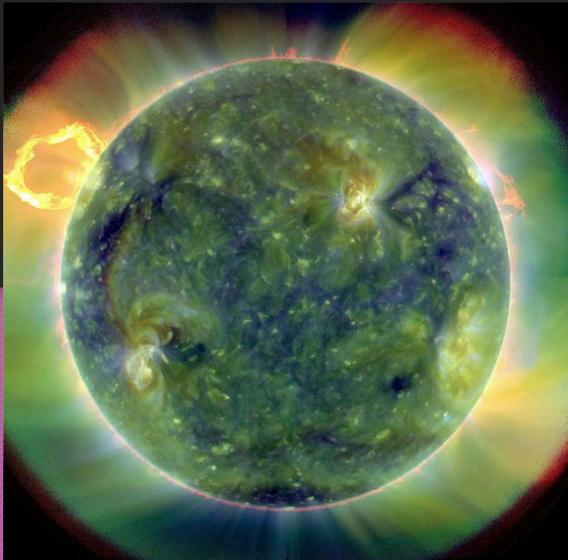
What is color?

Color, is a visual sensation that involves a light source,
an object and a viewer.



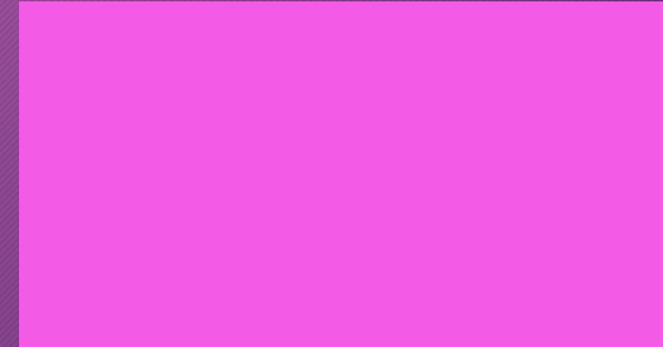
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WHAT COLOR IS GRASS?



WHAT COLOR IS GRASS?



A. Green?

WHAT COLOR IS GRASS *AT NIGHT?*



WHAT COLOR IS GRASS *AT NIGHT?*



B. Grey???

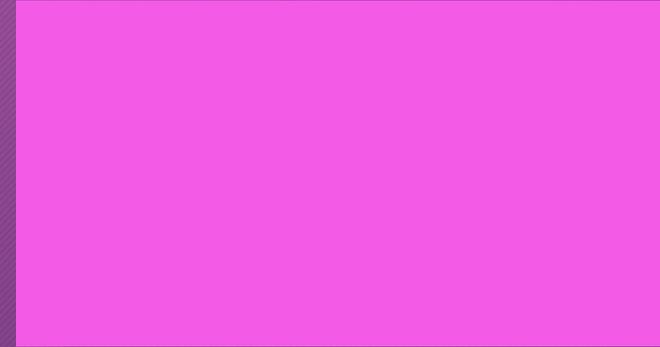
WHAT COLOR IS GRASS?



A. Green?

What is color?

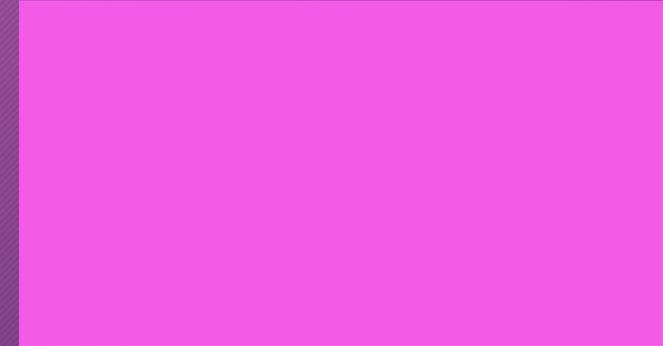
Why, does red look red, or green look green?



What is color?

Why, does red look red, or green look green?

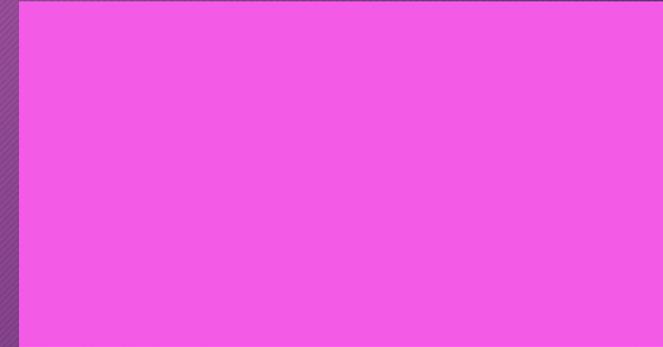
Red looks red and green looks green because the items (red or green) absorbs **all other colors**, reflecting the colors red, or green.



What is color?

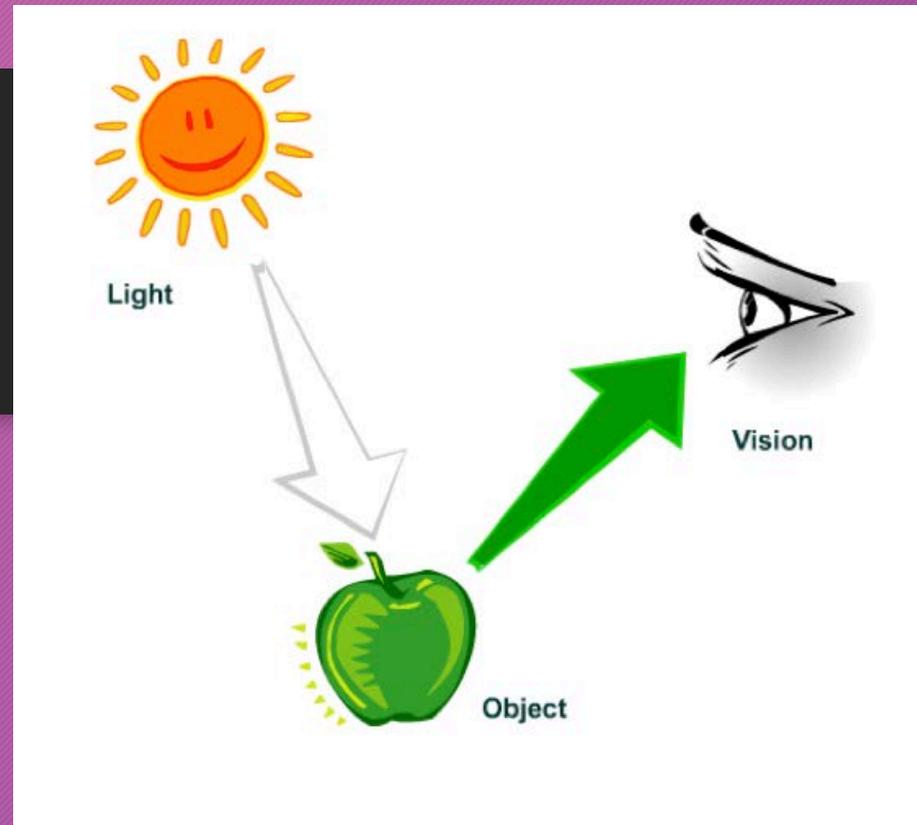
Why, does red look red, or green look green?

When any object is exposed to light, it reflects the color
in the prism that it cannot absorb.



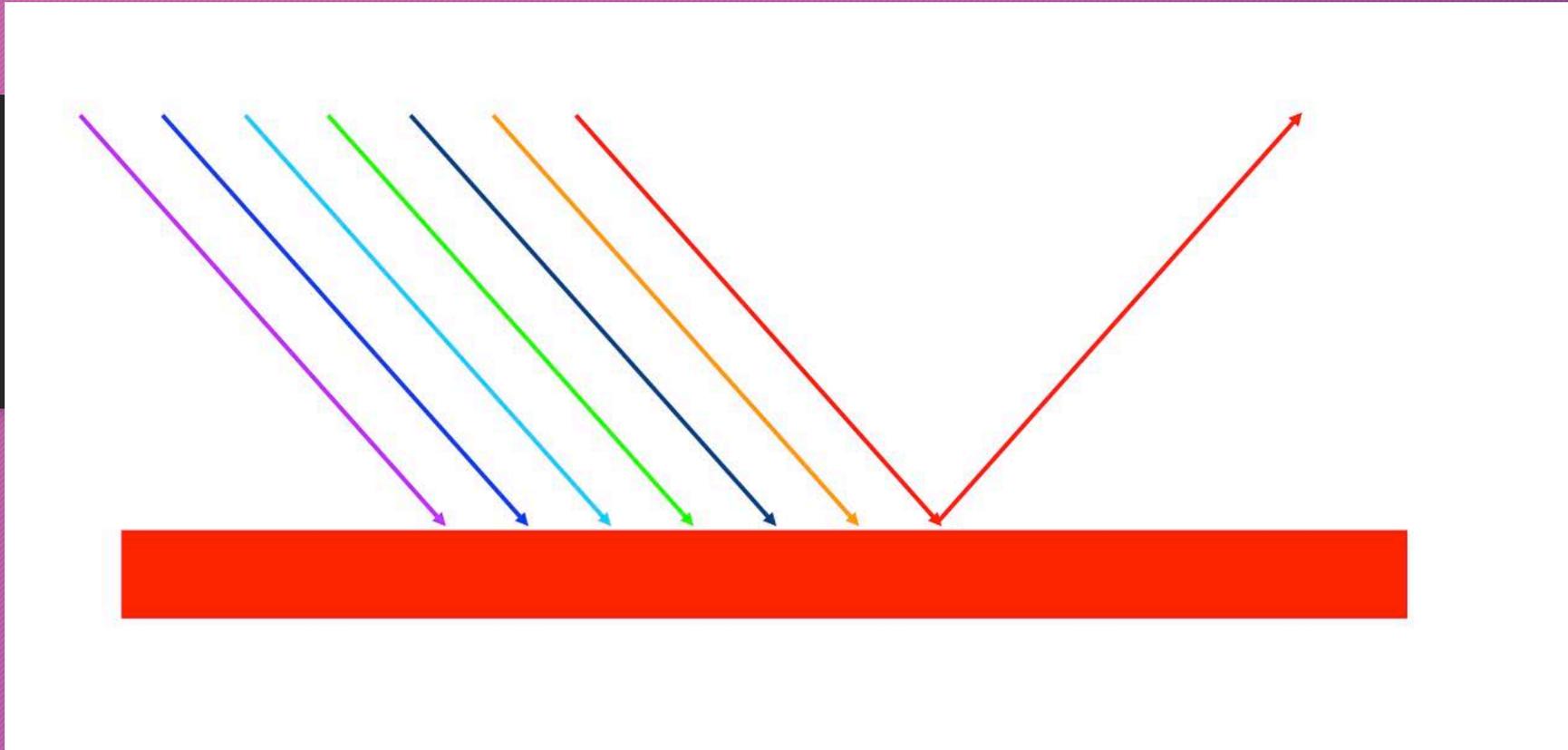
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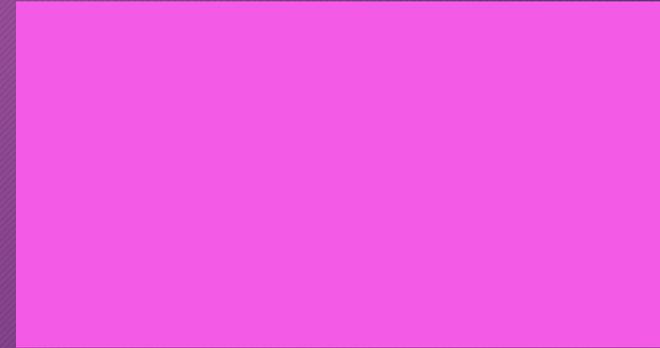


What is color?

Why, does red look red, or green look green?



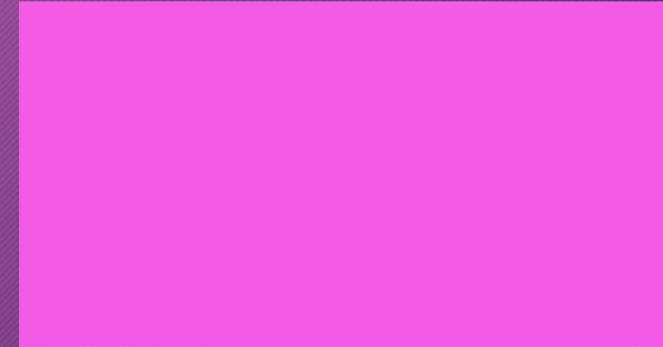
Is light the same as color?



Is light the same as color?

Light: reflected, absorbed, or transmitted

An object is "**colored**," because of the light it reflects—all other colors are absorbed into that specific object.

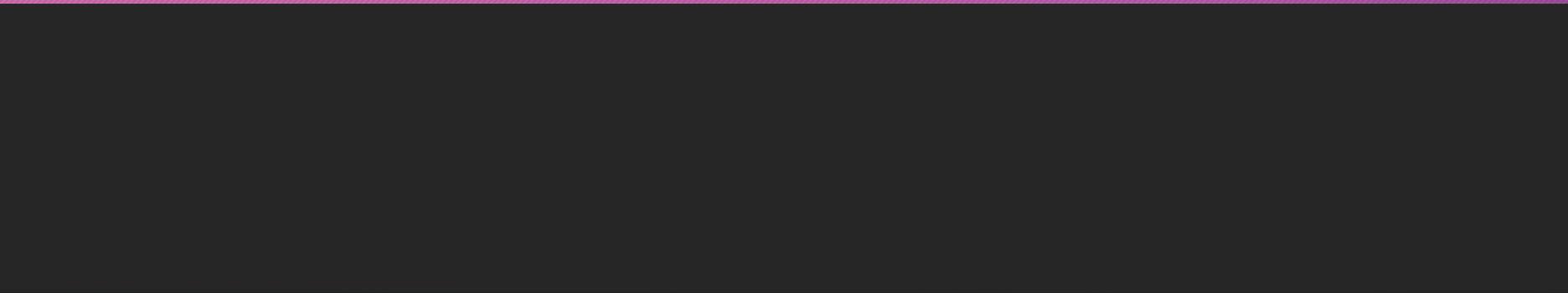


What is color?

Color can also confuse the mind and need to be used with understanding and care.

Blue, Brown, Green, Yellow, Red

What do you see?



Blue



Brown



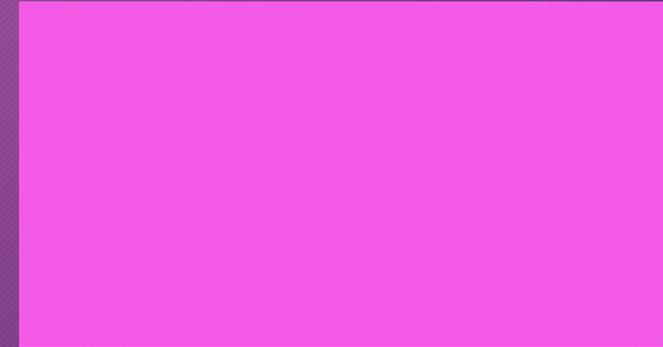
Green



Yellow



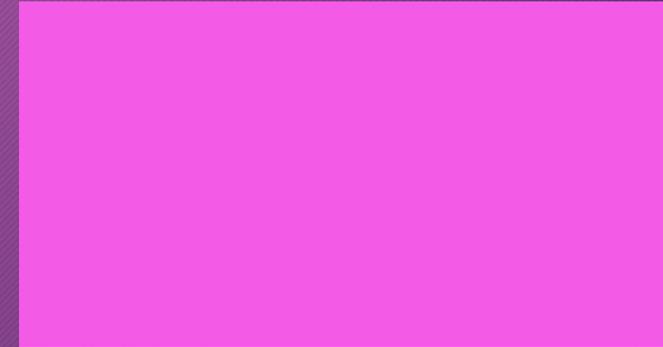
Red



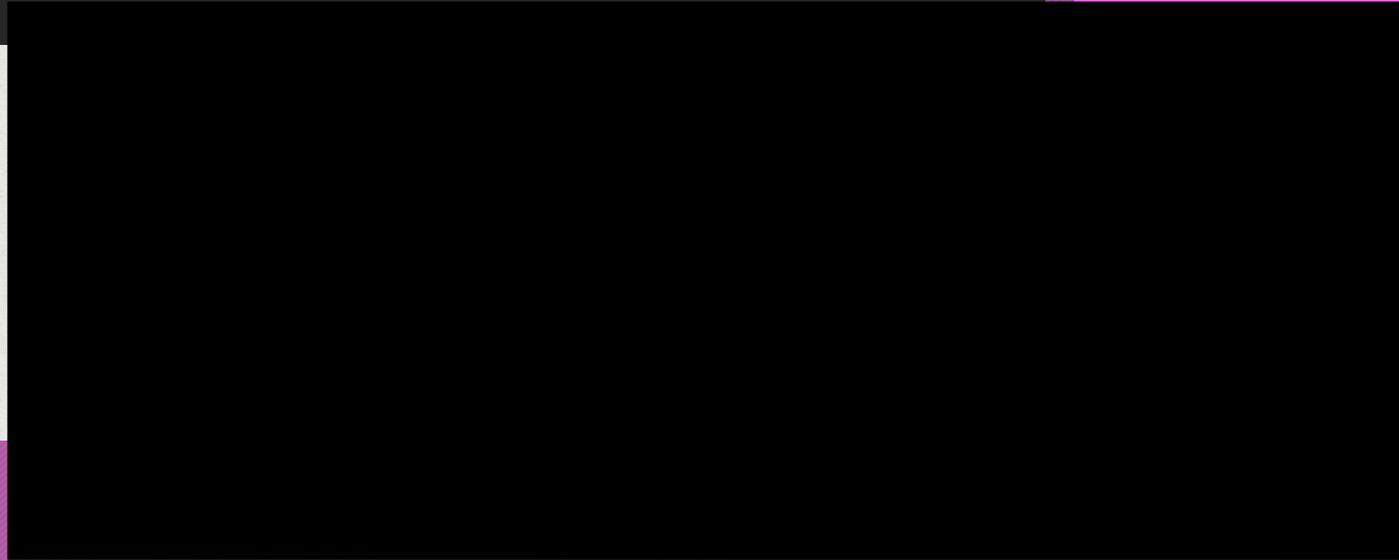
What did you see?

What is color?

The Stroop Effect!



The Stroop Effect

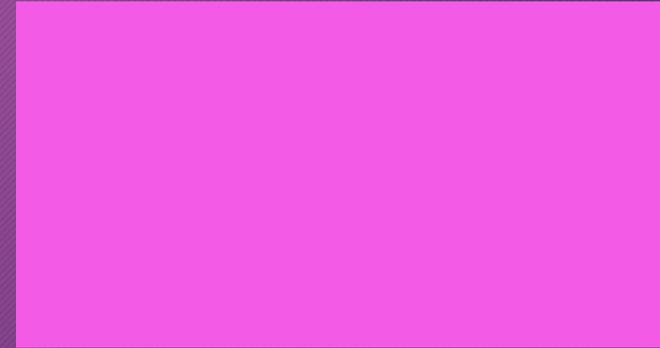
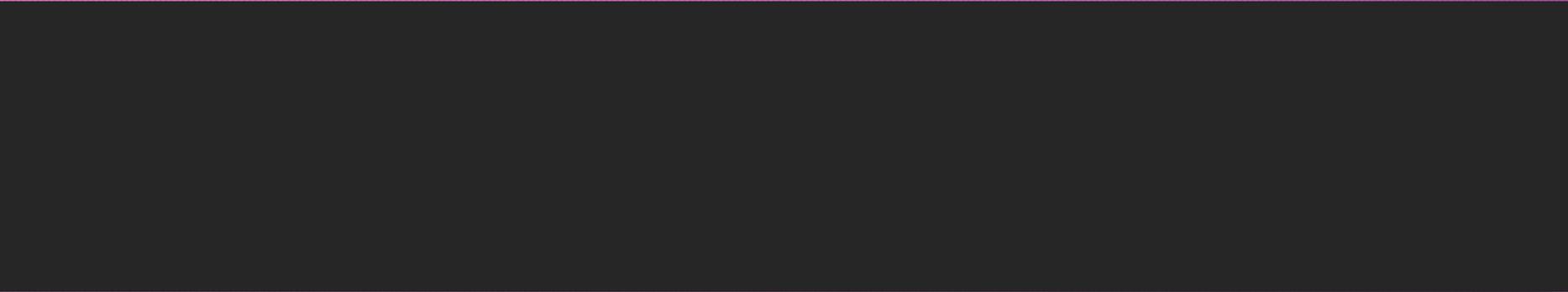


The Stroop Effect



THE STROOP EFFECT Glance at the image to the left and, as quickly as you can, name the animal whose shape is pictured. Chances are you had to stop and think, even if imperceptibly. The reason is the Stroop effect, a type of interference that occurs when the brain has to resolve conflicting meanings. Interpreting what a word means is automatic, so overriding “fish” with “pig,” say, likely takes a split second. Named for the psychologist who described the phenomenon, the Stroop doesn’t affect everyone—like those who can’t read the words in the first place. —Luna Shyr

Why is color important?



Why is color important?

Over **78%** of all perceptions are done by eye.

Over **65%** of all purchasing decisions involve color.

Why is color important?

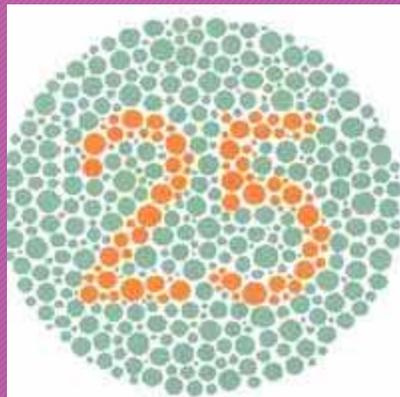


Color Blindness

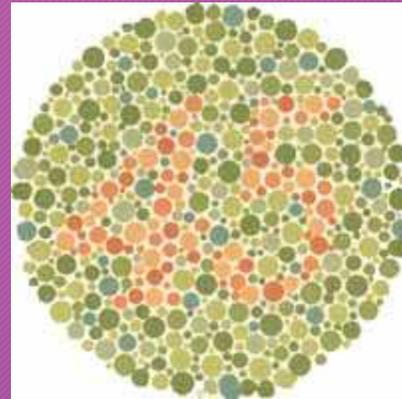
Take the test!

This is not an official test this is more like a parlor trick.

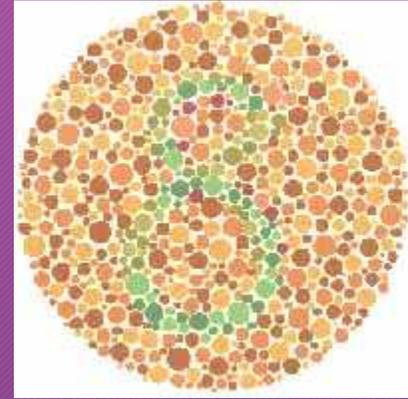
What do you see?



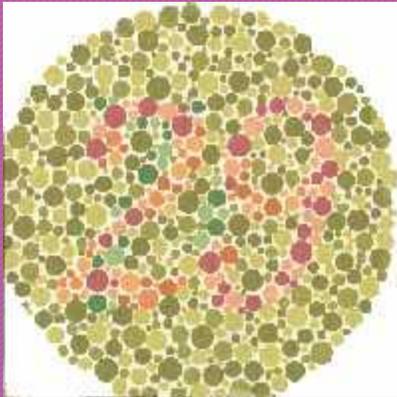
What do you see?



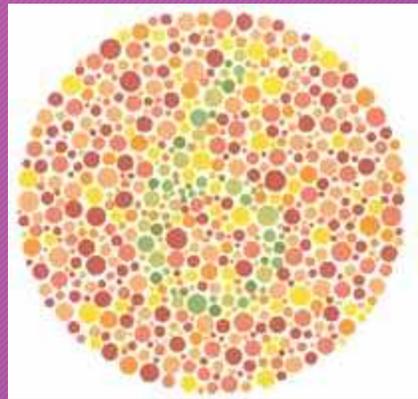
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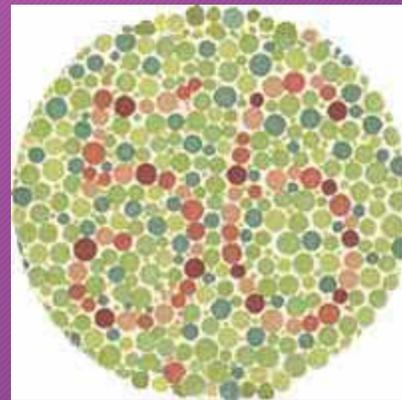
What do you see?



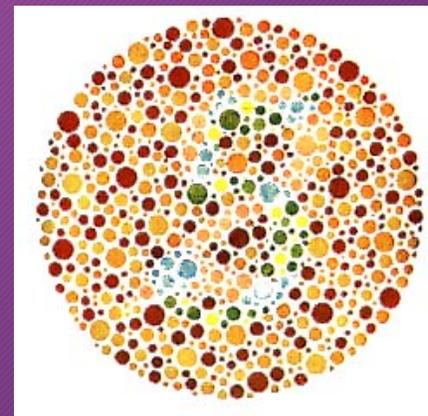
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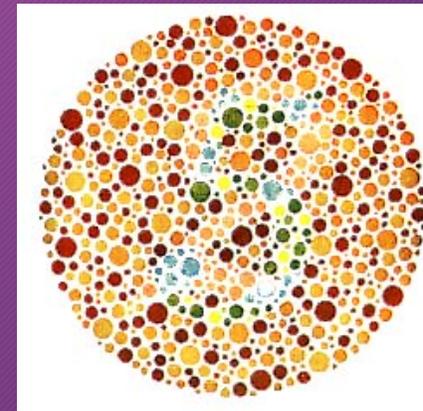
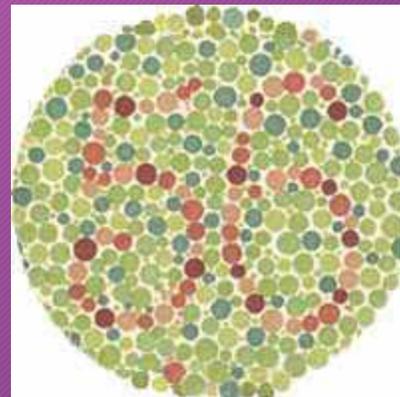
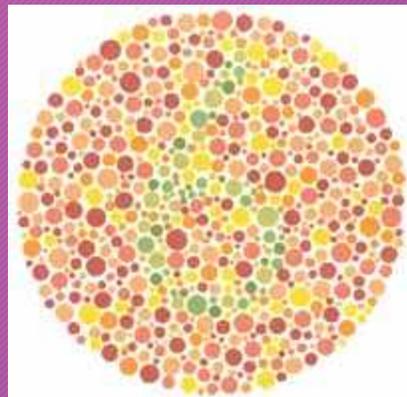
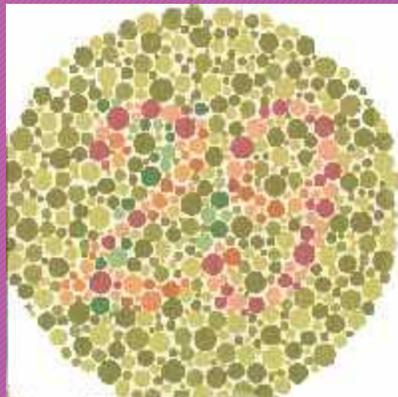
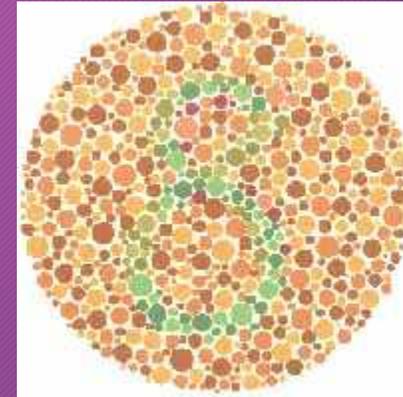
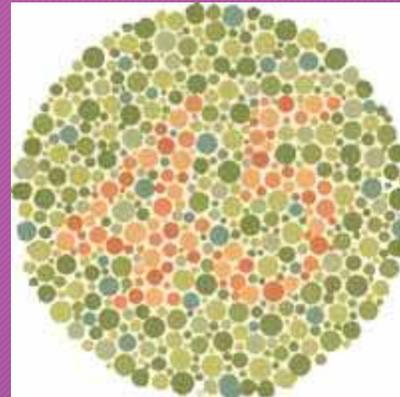
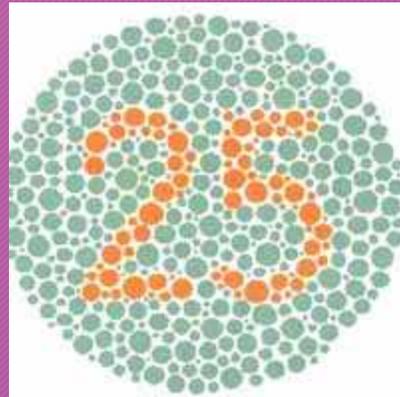
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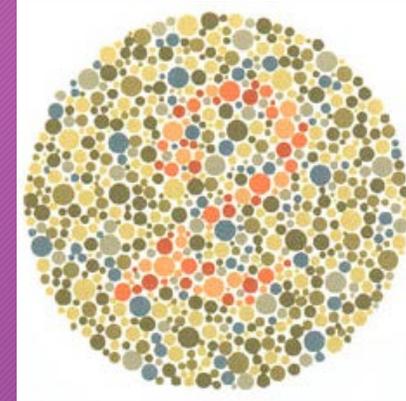
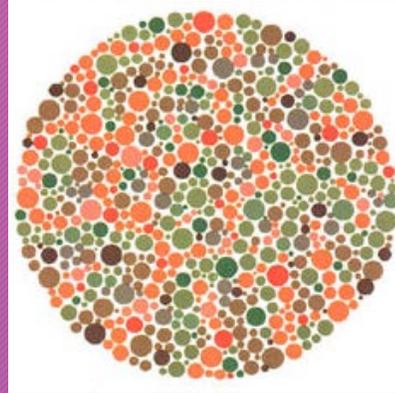
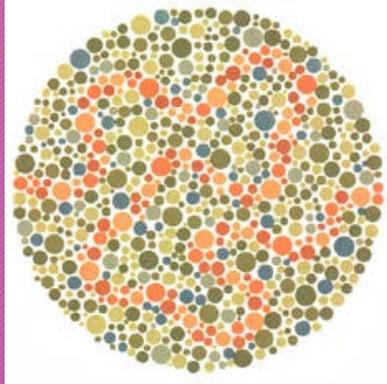


What do you see?



What do you see?





<http://www.colblindor.com/2012/10/22/ishiharas-test-for-colour-deficiency38-plates-edition/#prettyPhoto>



LEMON
SAGE
energizing
BODY WASH
GEL DOUCHE

Eco Mitchell

250 ml e / 8.5 fl. oz.



LEMON
SAGE
thickening
CONDITIONER
REVITALISANT

Eco Mitchell

250 ml e / 8.5 fl. oz.



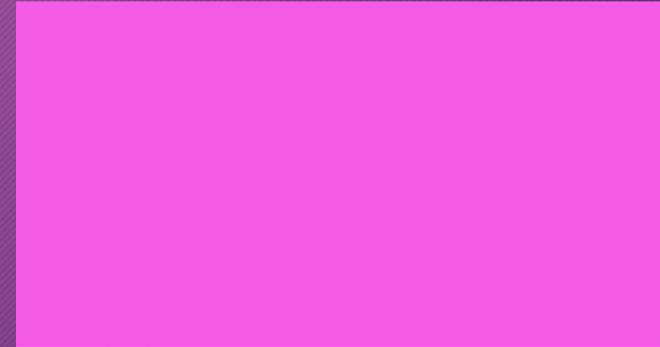
TEA
TREE
special
SHAMPOO
SHAMPOOING

Eco Mitchell

250 ml e / 8.5 fl. oz.

What is color?

For the graphic designer, art director, photographer, illustrator and printer color is:



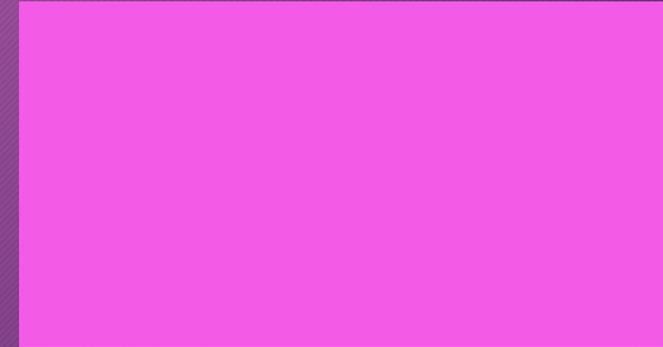
What color?

Tool, Underline, Scream, Attention

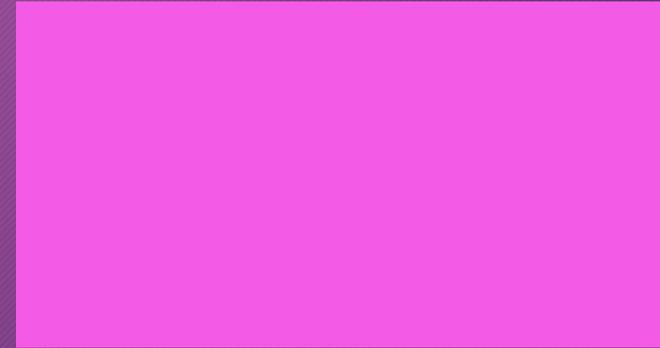
A visual smack in the face

Bold face type

An action item, drives focus



A Colorful Break!



dib

© Doris Brown



Eye on Color



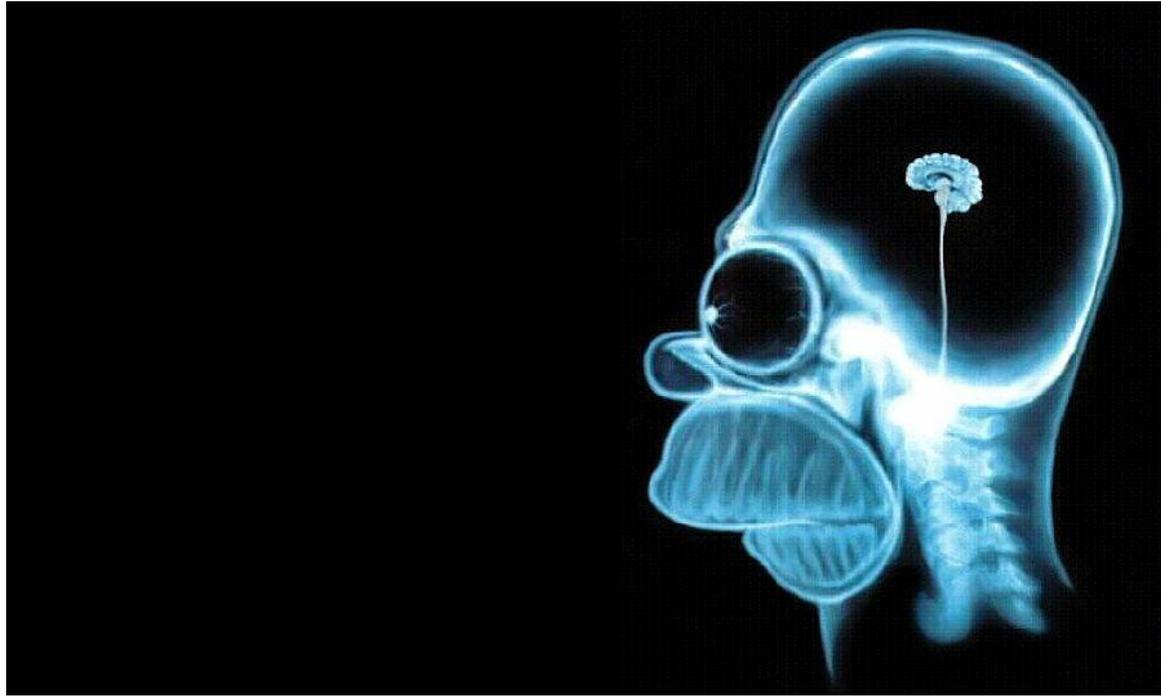


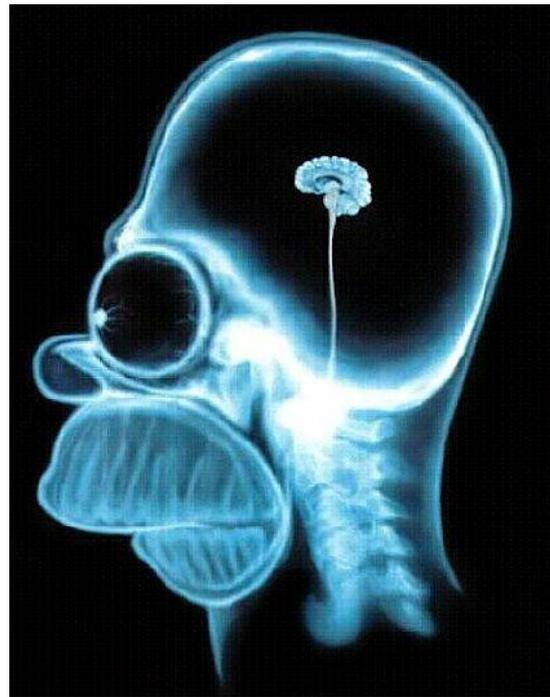
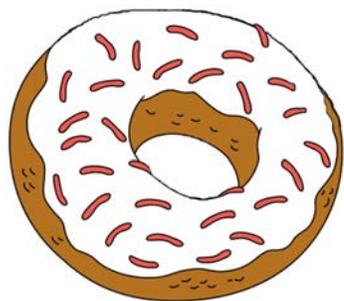
The color of Ideas

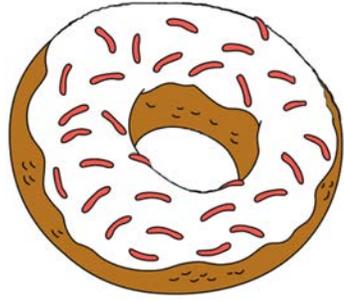
- How we see color.
- Creating & mixing colors.
- Printing colors.
 - Spot colors
 - Digital colors
- Color gamut & spaces
- About Pantone colors
- Color workflow + Communication



•Color
absor
huma

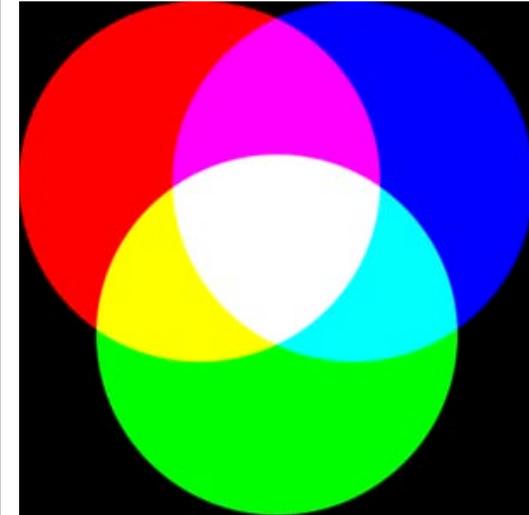




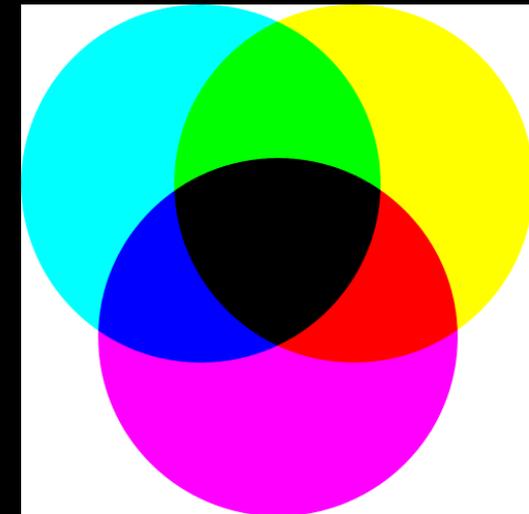


Creating Color

There are two ways to create the colors we want. One is based on light, the other on inks.



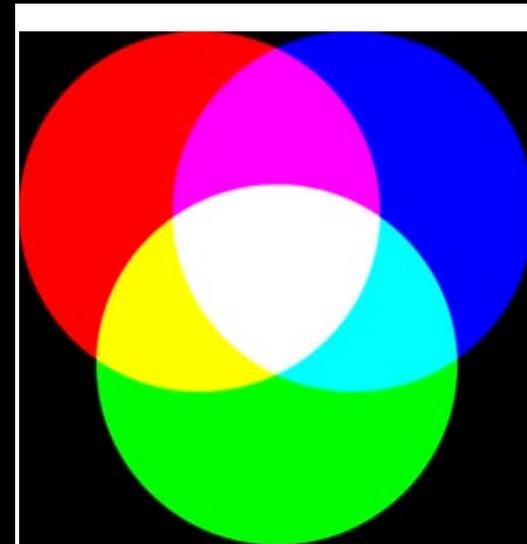
Additive



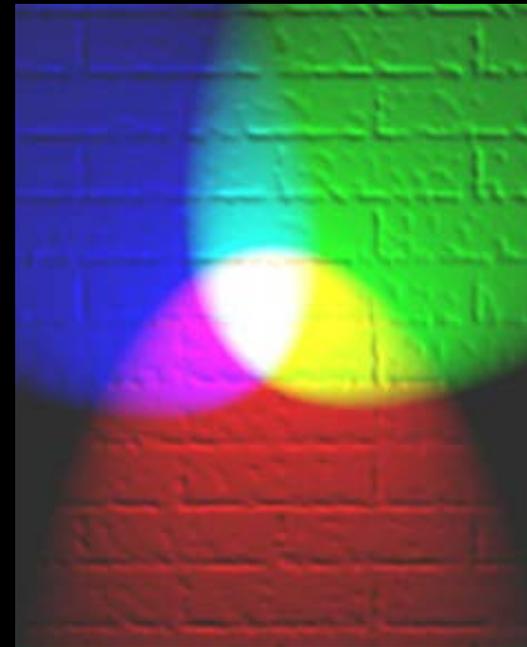
Subtractive

Additive Color

Additive color mixing system is used in computer monitors, TV sets, and to illuminate actors on stage.

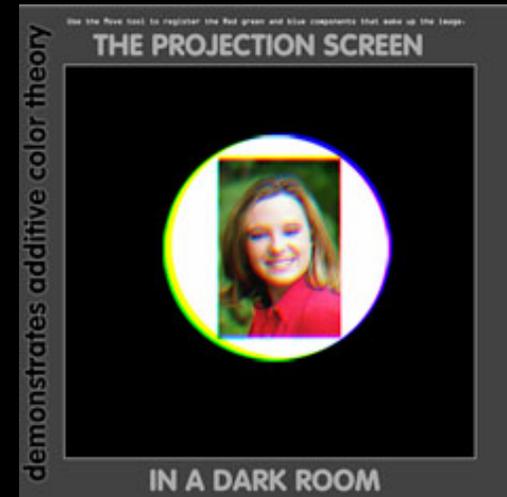
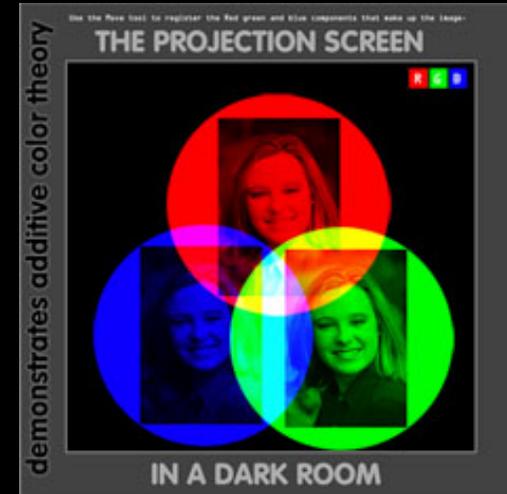


Additive



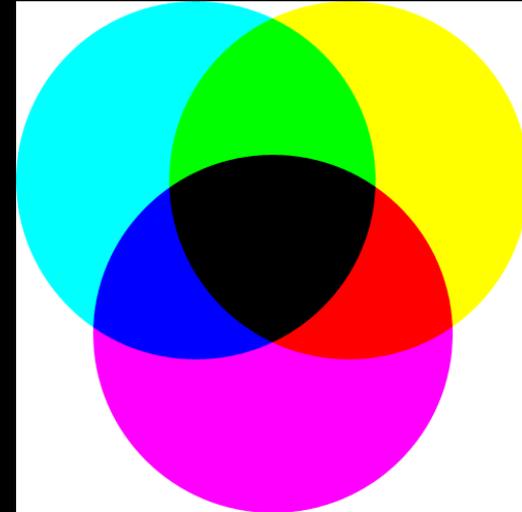
RGB Color

Each color of the spectrum has a specific frequency. Adding these colors of light together increases the number of frequencies present and the more colors you add the closer it becomes to white.

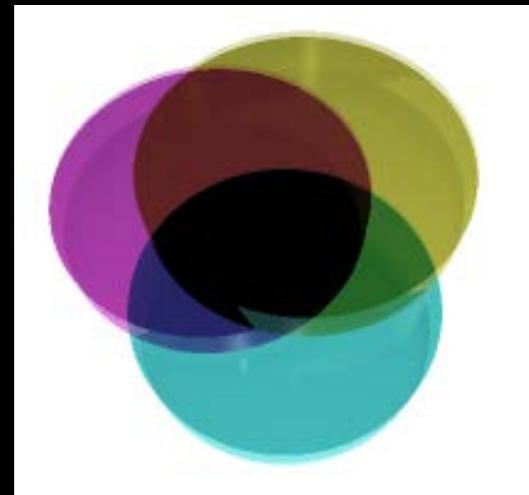


Subtractive Color

Layers of glass vividly show how semi-transparent layers of color combine on paper into spectrum of CMY colors. K (black) is added in printing because it is more black and for economic reasons.



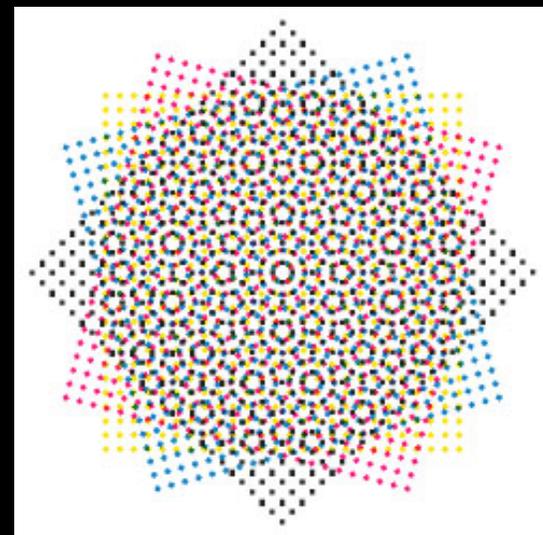
Subtractive



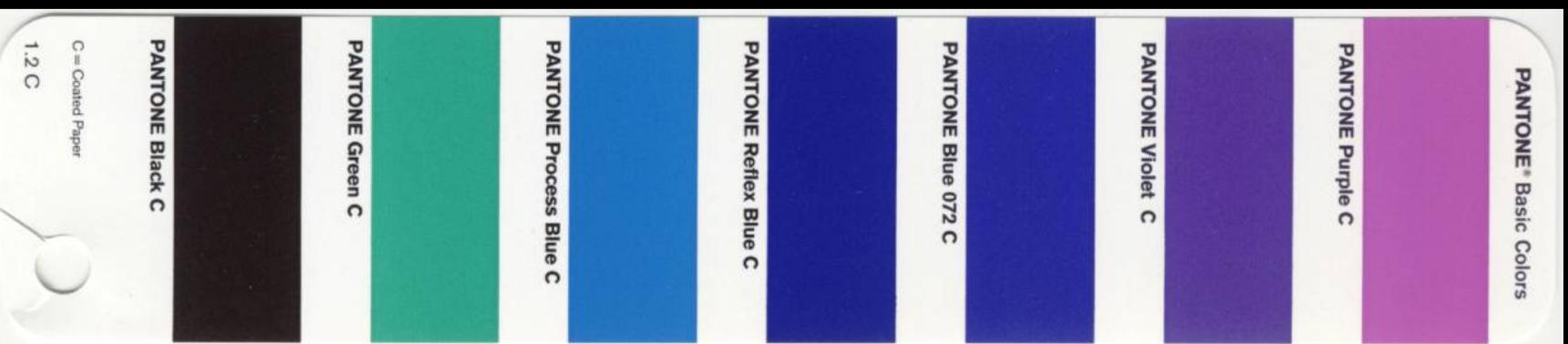
Spot :: Process Color



Solid Mixed



Digital Screen

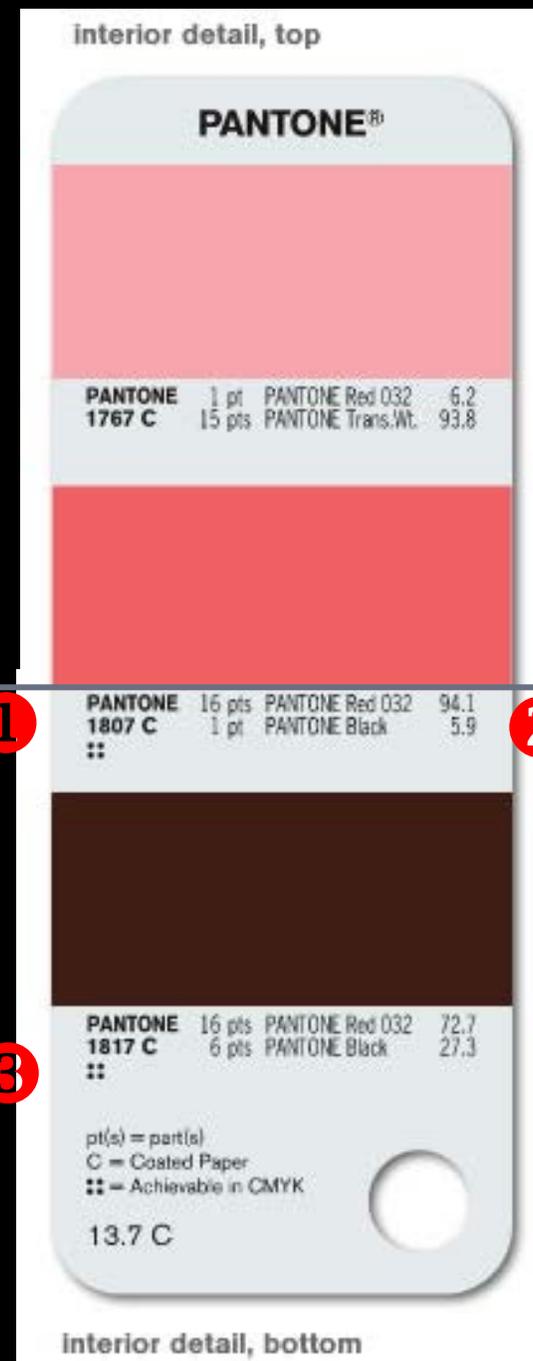


Spot Color.



• **FORMULA GUIDE**
/solid coated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier

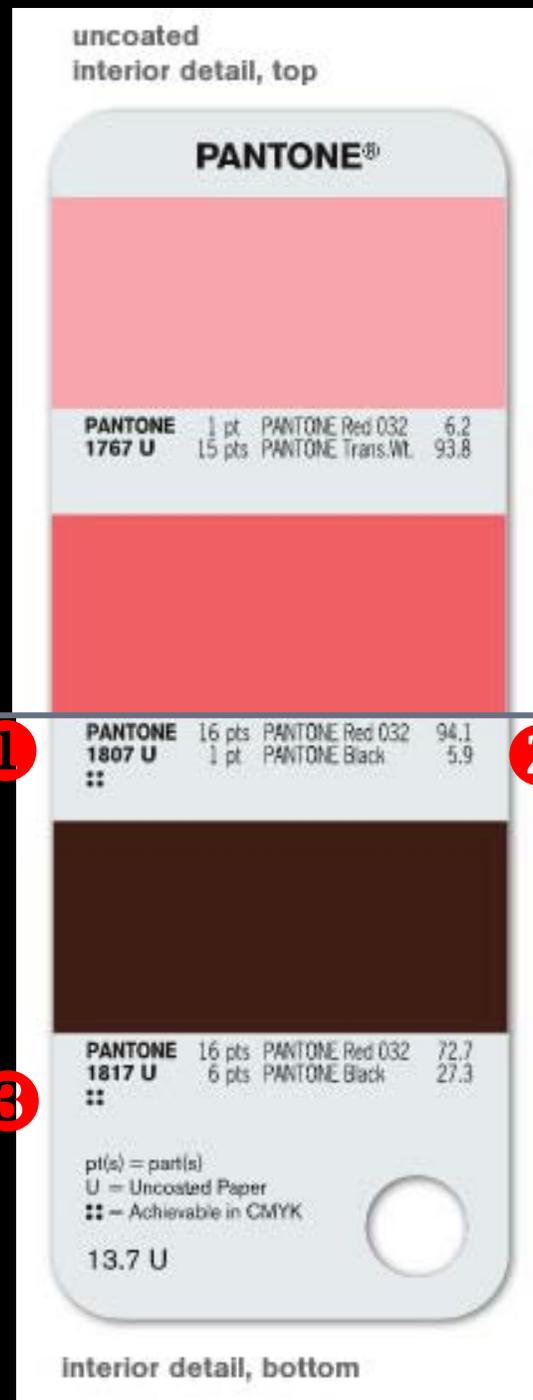


Spot Color.



• **FORMULA GUIDE**
/solid uncoated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier

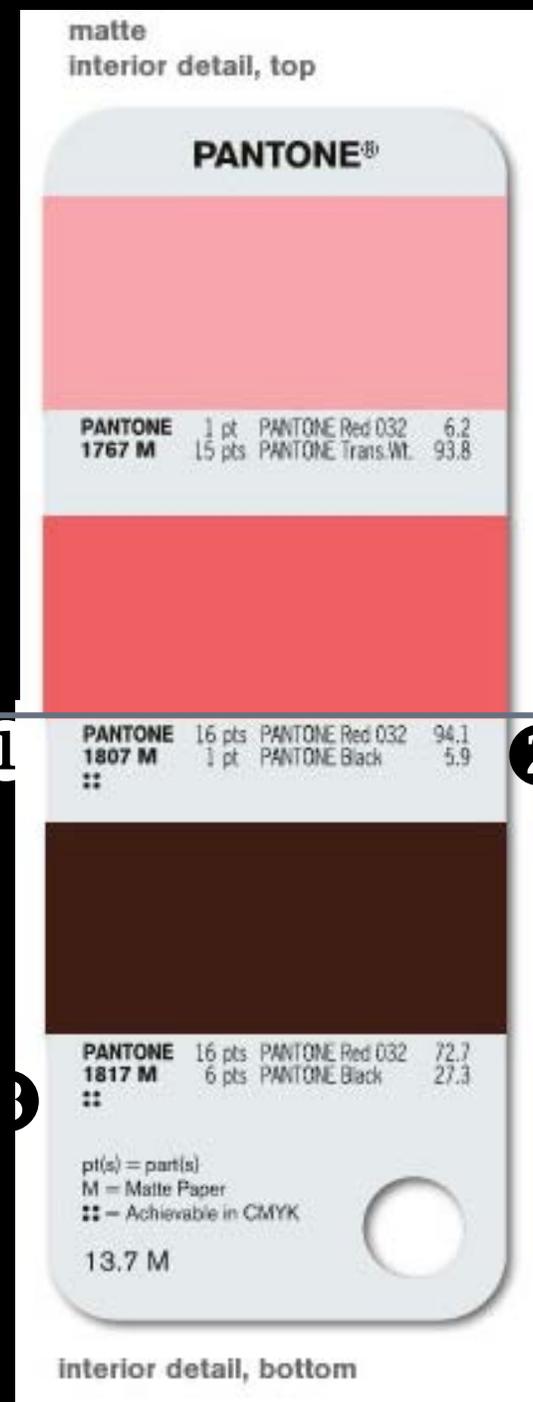


Spot Color.



• **FORMULA GUIDE**
/solid matte

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier



Spot Color.



•TINTS
/coated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier



Spot Color.



•TINTS
/uncoated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier



Spot Color.



•COLOR BRIDGE
/coated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier

interior detail, top



interior detail, bottom

Spot Color.



•COLOR BRIDGE
/uncoated





PANTONE® Process Colors



PANTONE Process Yellow C



PANTONE Process Magenta C



PANTONE Process Cyan C



PANTONE Process Black C



These colors meet SWOP specifications (Specifications Web Offset Publications).

PANTONE Process Color System®

The PANTONE Process Color System offers a comprehensive palette of over 3,000 process color combinations. It is designed to provide the same degree of accuracy and assurance for the selection, specification, reproduction and control of process color that the PANTONE MATCHING SYSTEM® provides for flat/solid color. Available for SWOP and Euroscale.

C = Coated Paper

1,3 C



Process

Color



- When printed, the overlapped dots of the colors reproduce the full color image.

Color separations are made of each of the color components of the image.

Cyan **Magenta** **Yellow** **Black**

Printing plates are made from the film separations, one for each color.

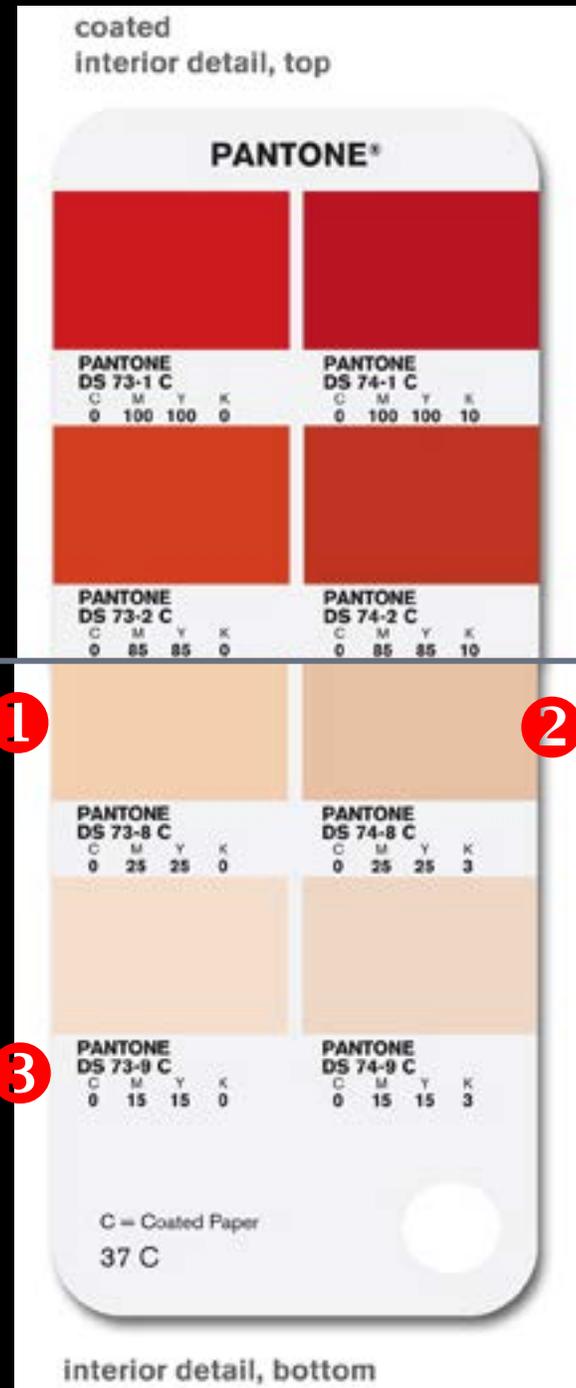


CMYK Color.



•4 COLOR
PROCESS GUIDE
/coated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier

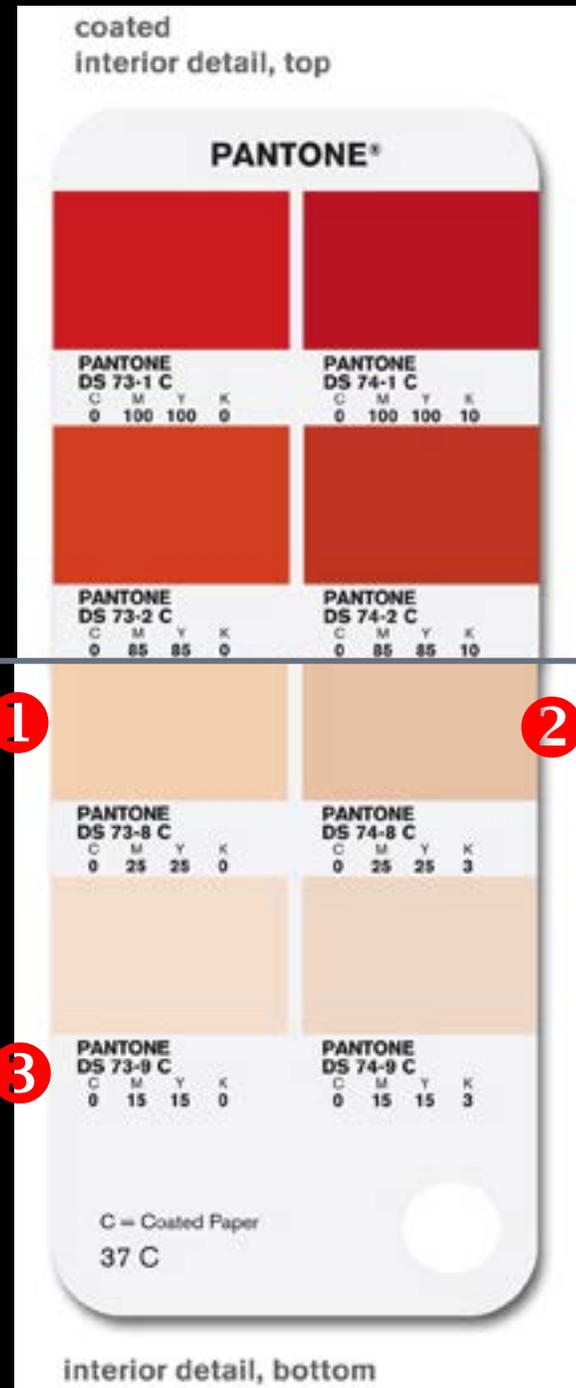


CMYK Color.



•4 COLOR
PROCESS GUIDE
/uncoated

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier



CMYK Color.



•4 COLOR
PROCESS GUIDE
/coated euro

- 1 Color #
- 2 Mixing formula in parts & weight
- 3 Achievable in CMYK identifier

coated
interior detail, top



1

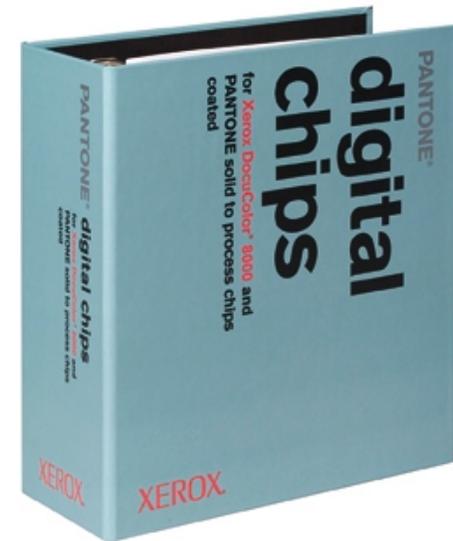
2

3

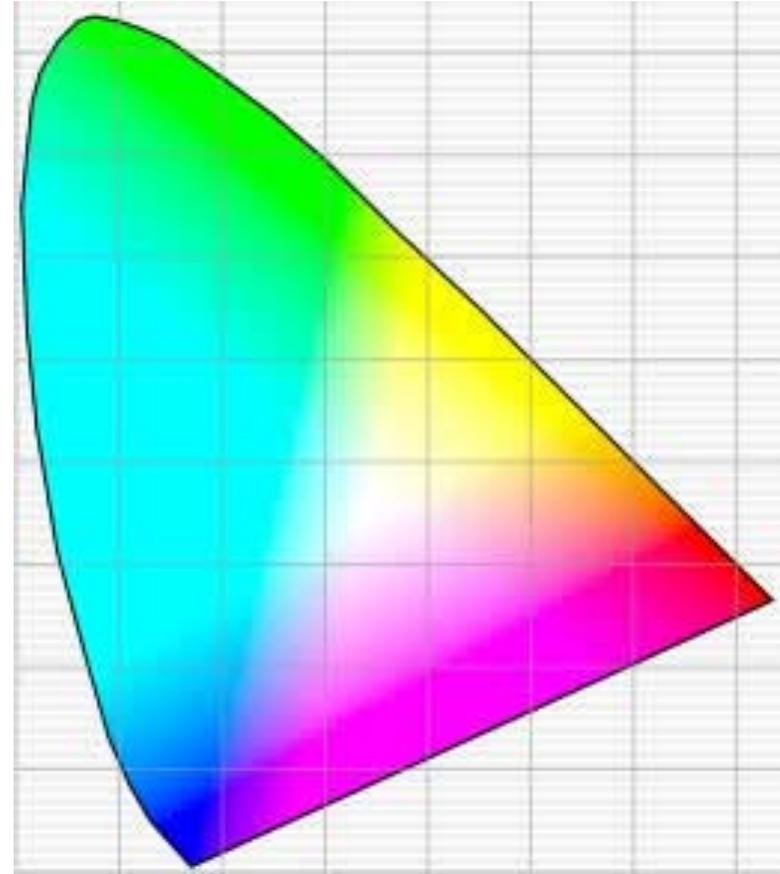


interior detail, bottom

Xerox digital chips

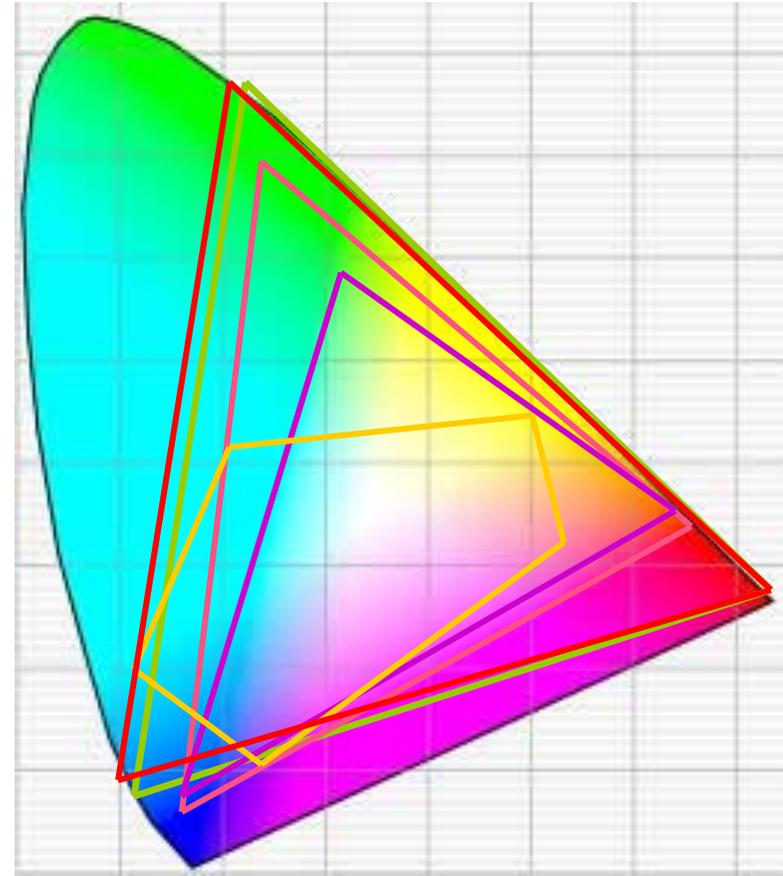


Color Gamut



When working with digital images, we use color models to describe these colors. There are a number of them and each use a different way of describing colors.

- ① rgb work space
- ② Adobe rgb
- ③ Srgb space
- ④ CMYK ink space
- ⑤ Hexachrome[®] ink space





PANTONE® Hexachrome®
PANTONE Hexachrome
Yellow C



PANTONE Hexachrome
Orange C



PANTONE Hexachrome
Magenta C



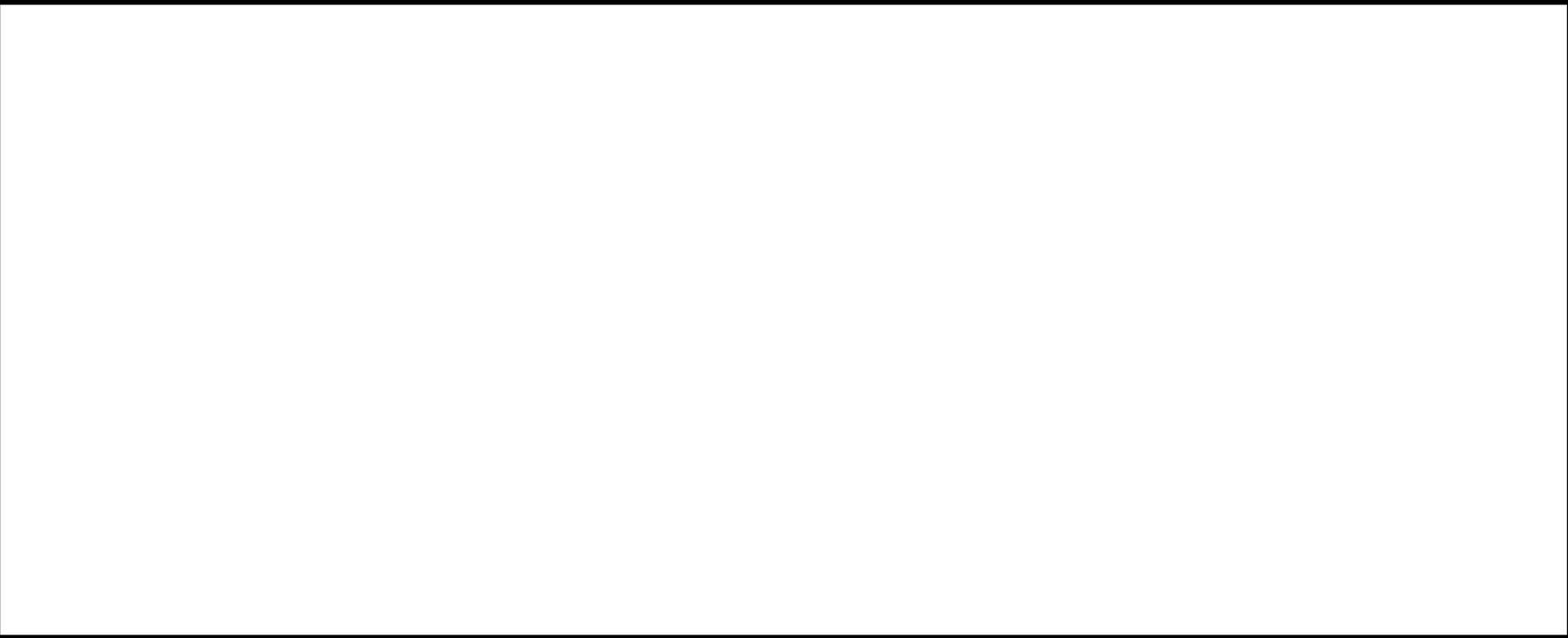
PANTONE Hexachrome
Cyan C



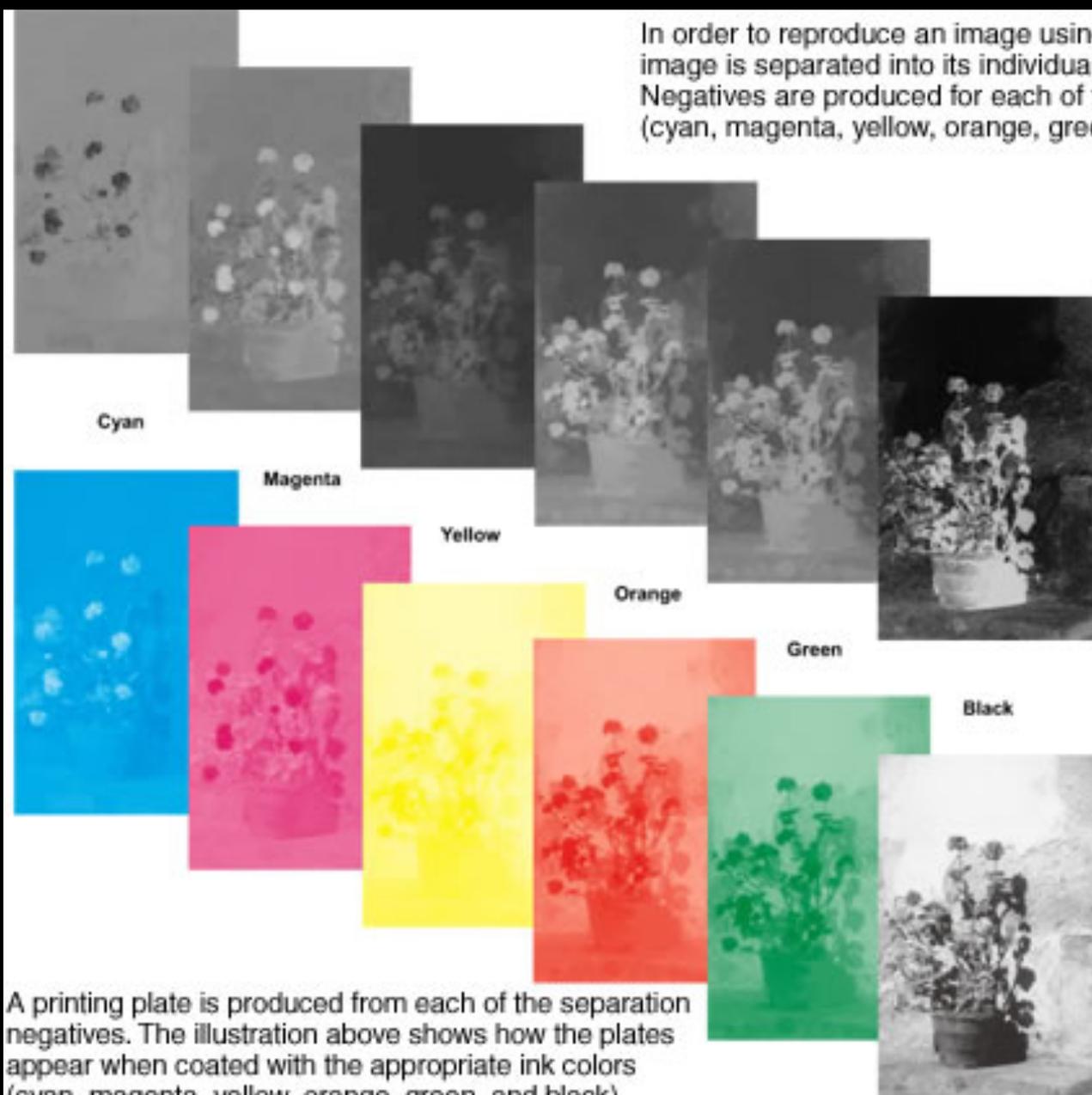
PANTONE Hexachrome
Green C



PANTONE Hexachrome
Black C



In order to reproduce an image using high-fidelity, the image is separated into its individual color components. Negatives are produced for each of the color components (cyan, magenta, yellow, orange, green, and black).



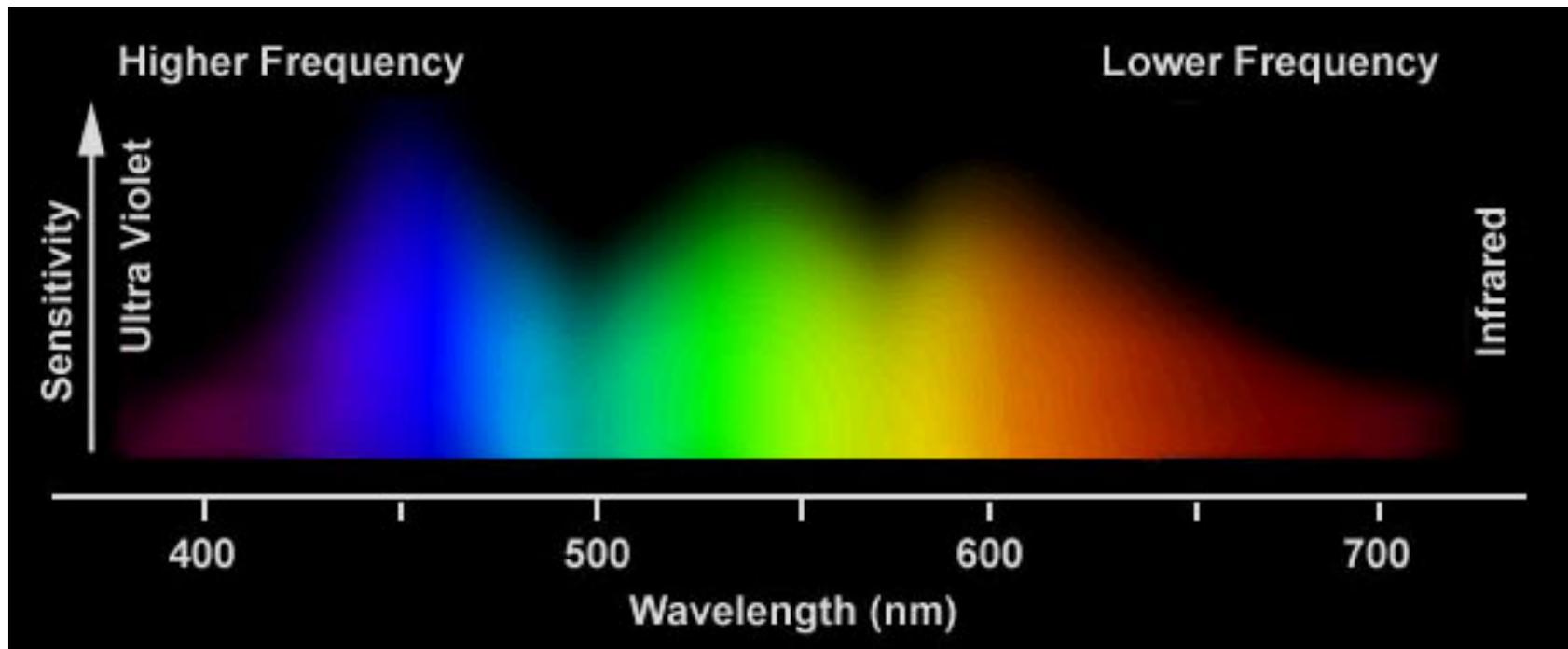
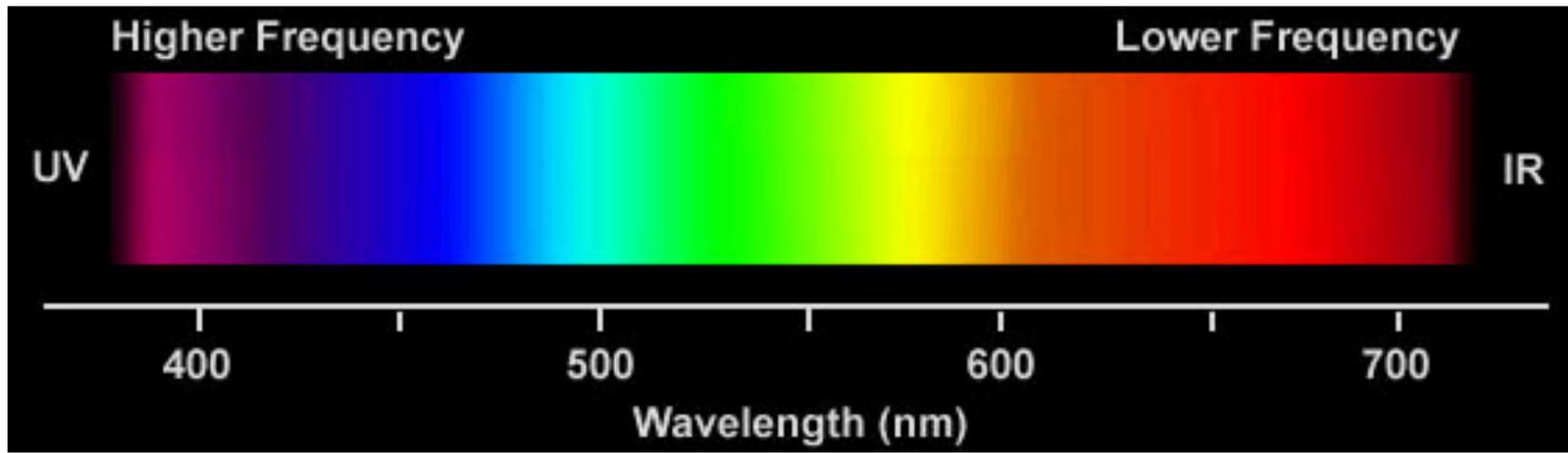
A printing plate is produced from each of the separation negatives. The illustration above shows how the plates appear when coated with the appropriate ink colors (cyan, magenta, yellow, orange, green, and black).

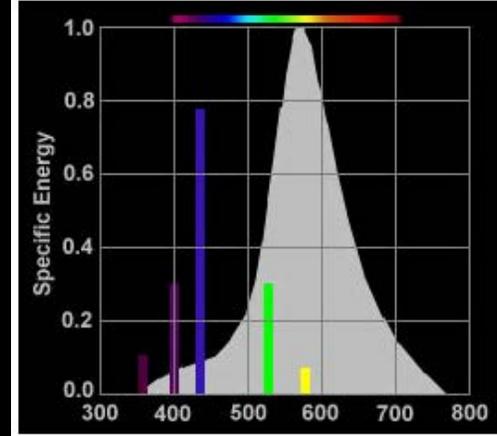
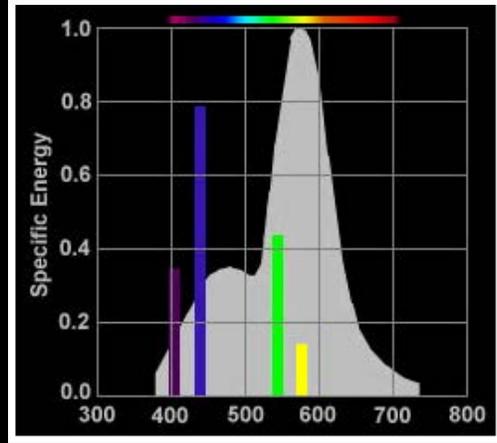
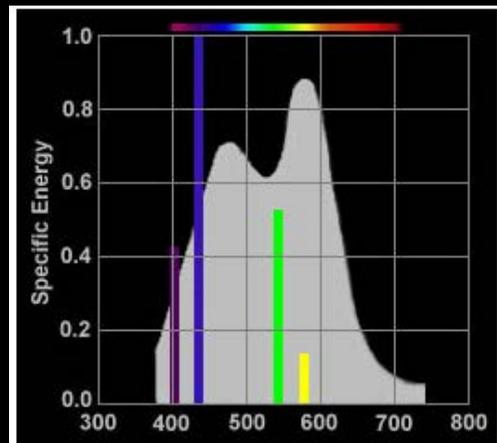
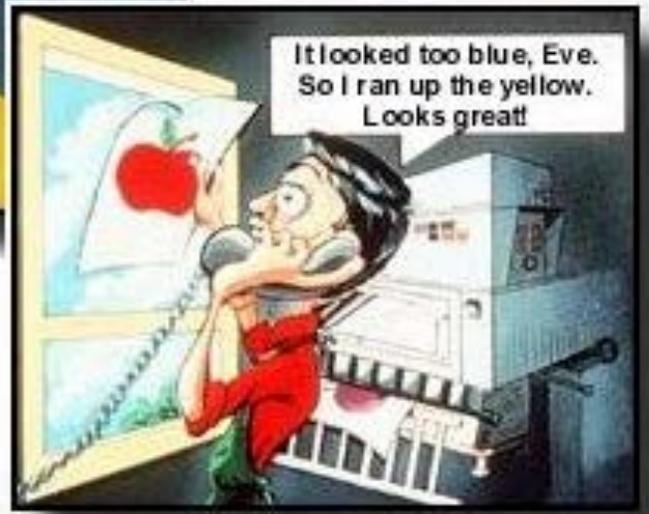
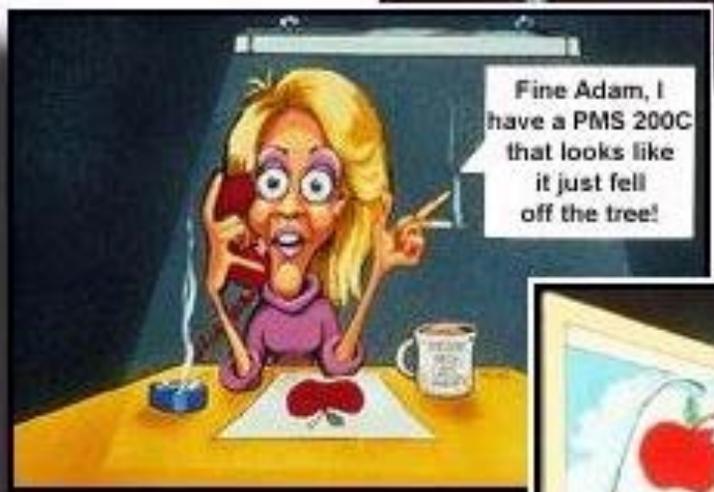
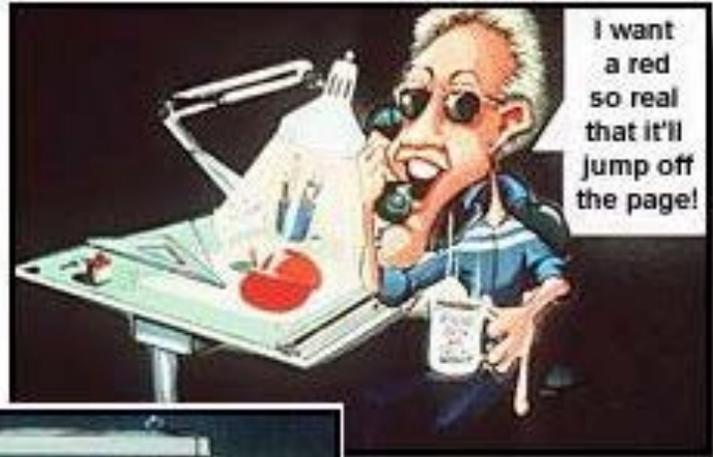


When printed, the overlapping dots of the separate colors simulate the full color image.

Viewing **Color**







Identify
Color.



•COLOR CUE 2



Calibrate
Color.



•i1 display 2



Calibrate
Color.



•ColorMunki
Design



Calibrate
Color.

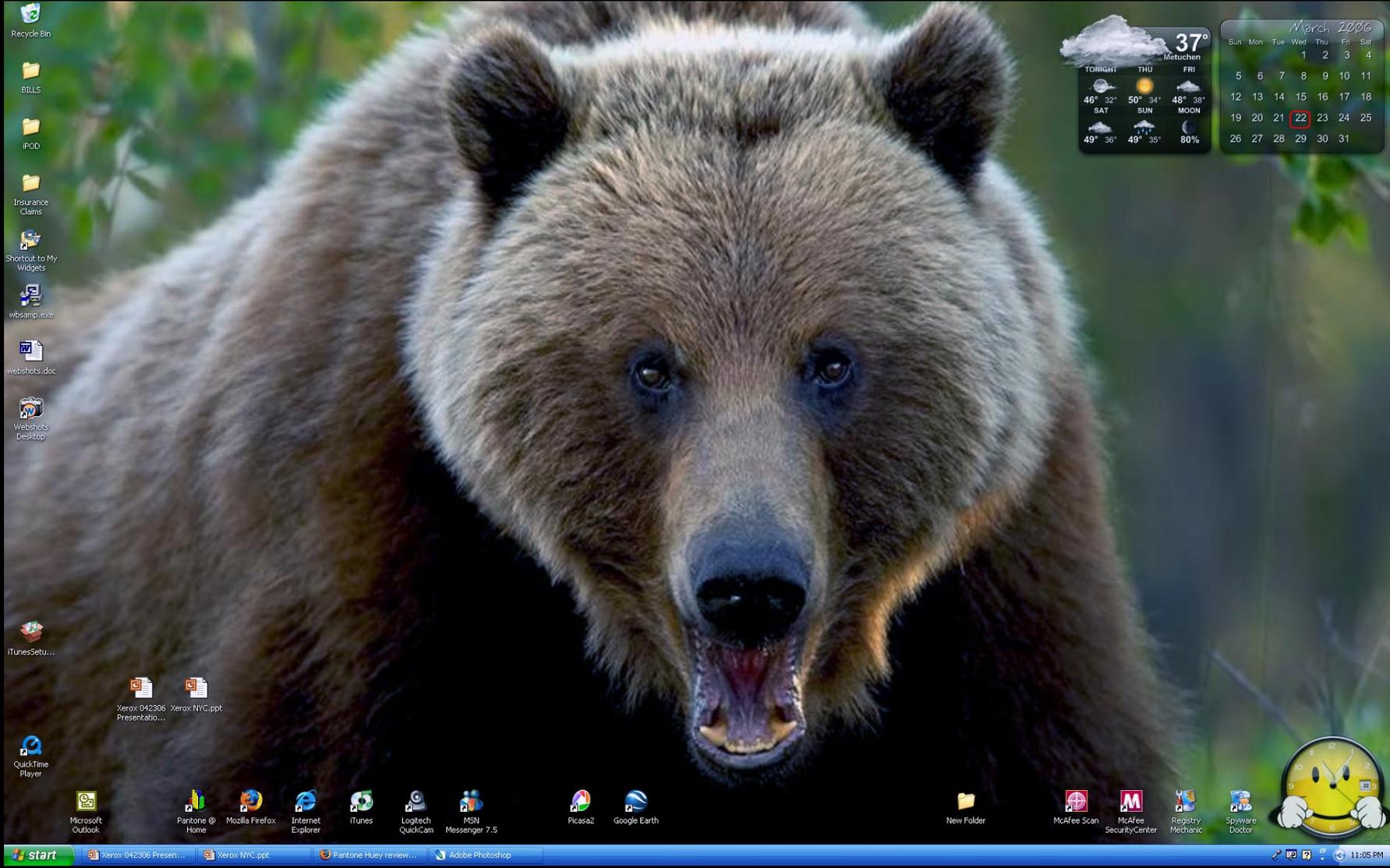


•huey



©2006 Keith Cooper





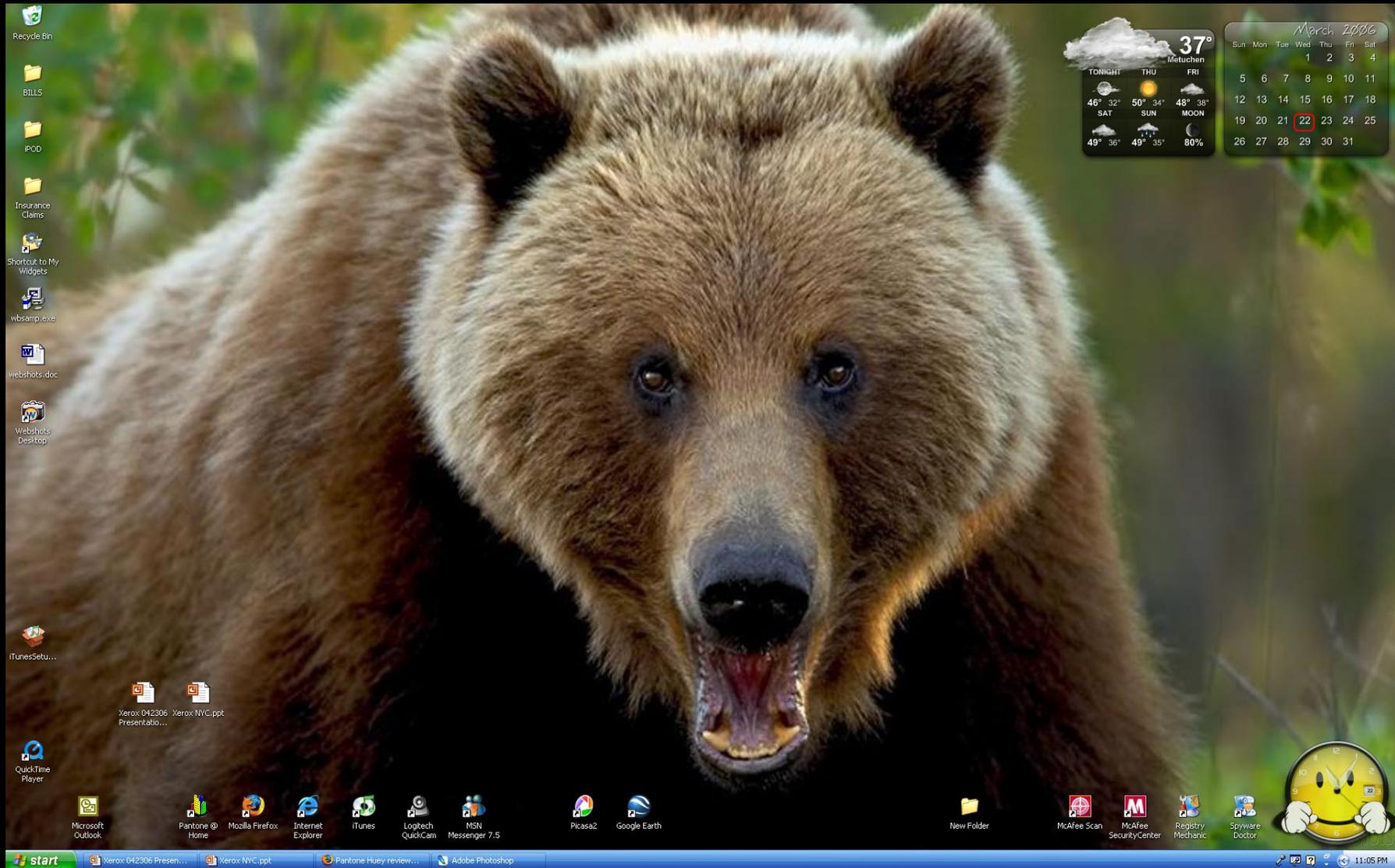
37°
Metuchen

TONIGHT	THU	FRI
46° 32°	50° 34°	48° 38°
SAT	SUN	MOON
49° 36°	49° 35°	80%

March 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	



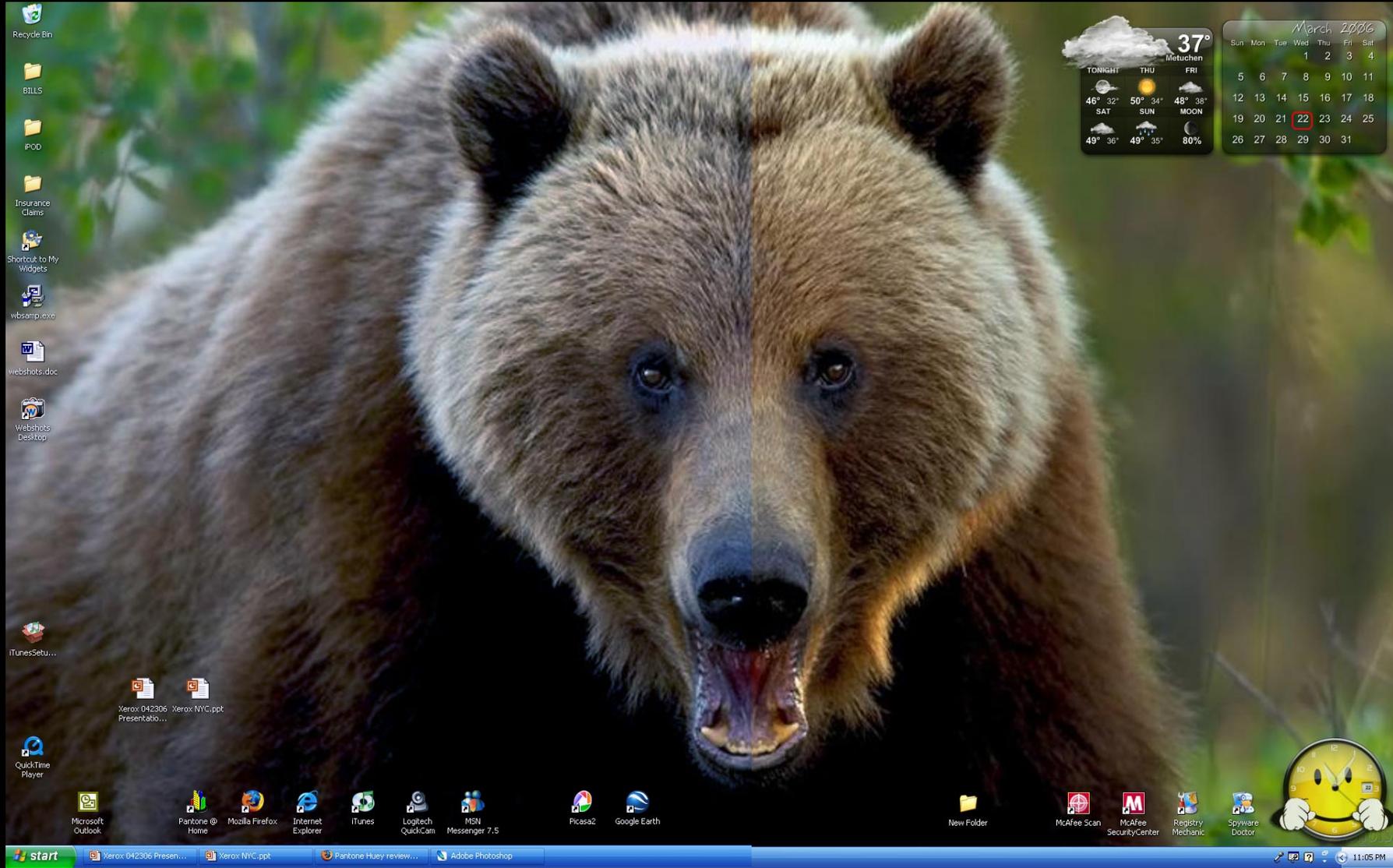


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37°
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March 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Textile
Color.



• FASHION + HOME
/guide



Plastics Color.



•Opaque + transparent



Color

Forecasting.

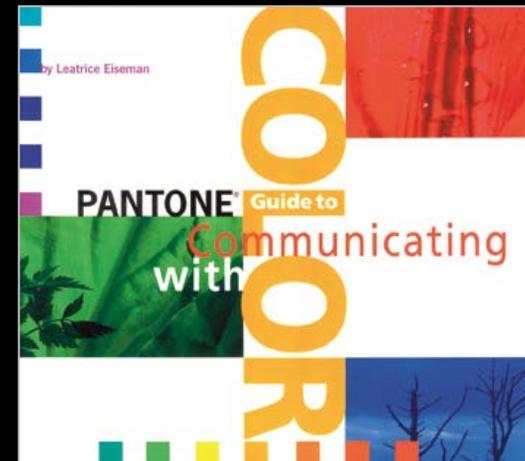
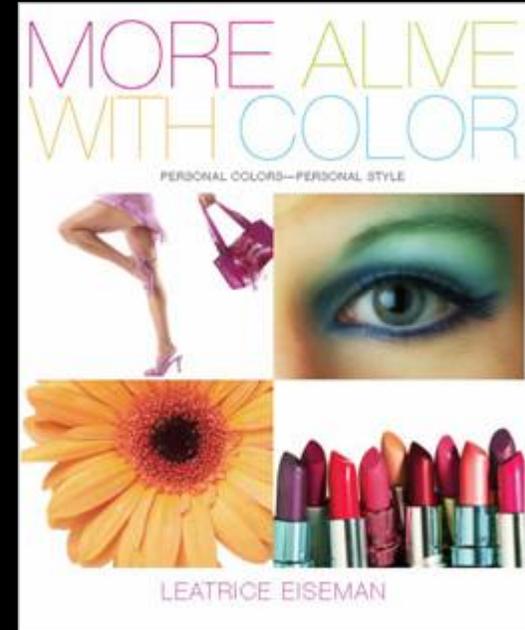
Design direction updated every season,
color palettes, signature prints, and
trends



Color

Knowledge.

Books on color psychology, usage, color palettes and trends.





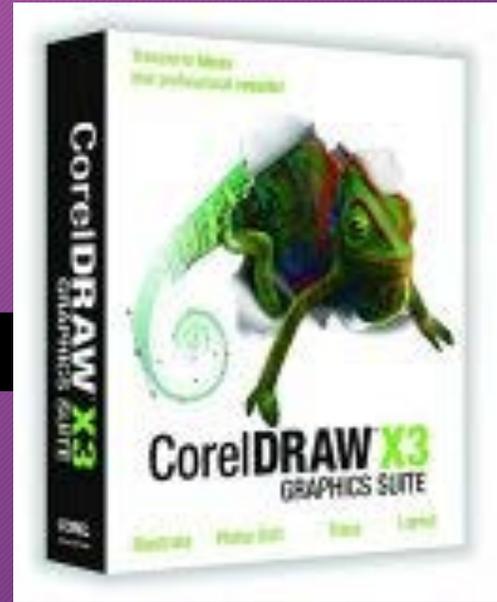
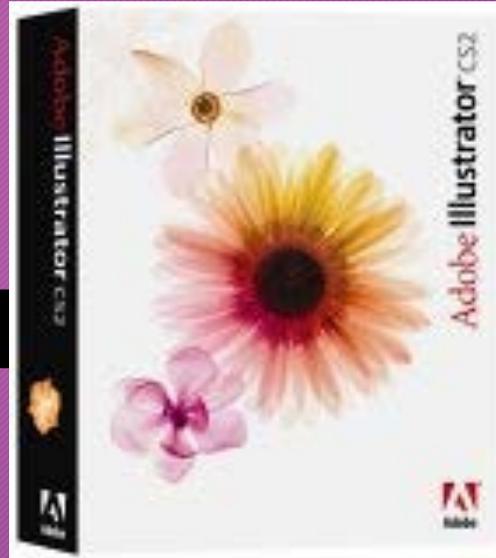
- Understanding the process.

Color Workflow.

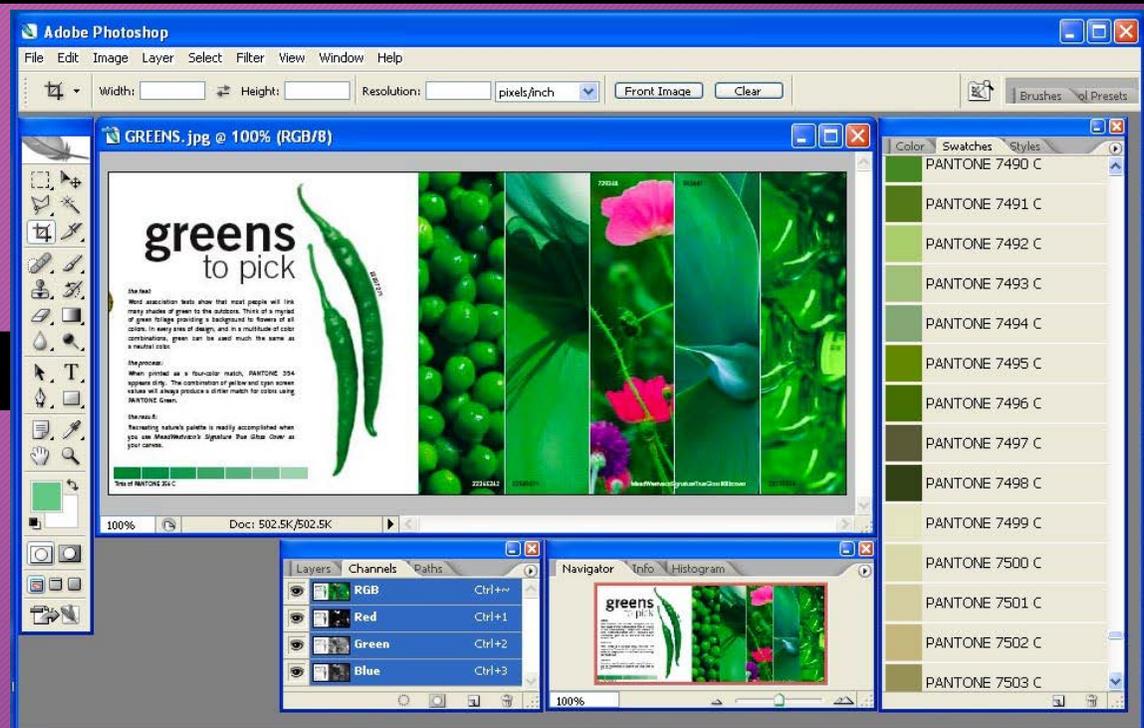
CREATE



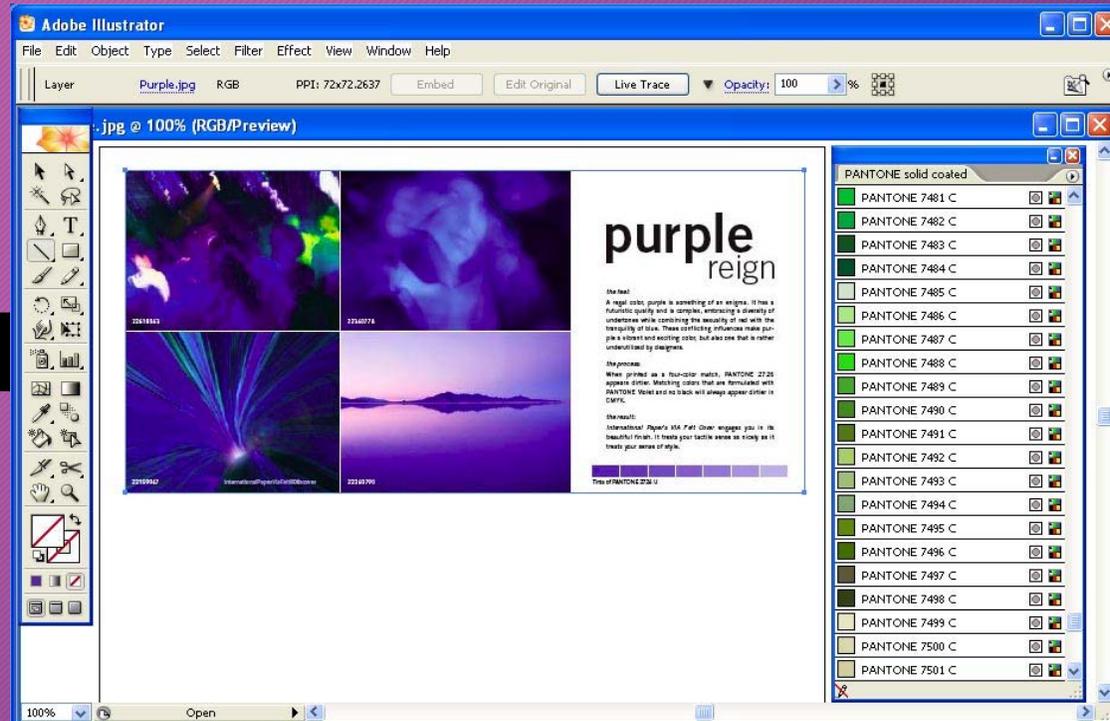
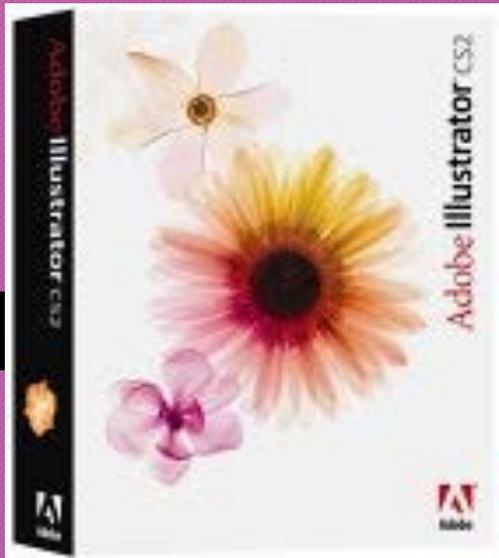
CREATE



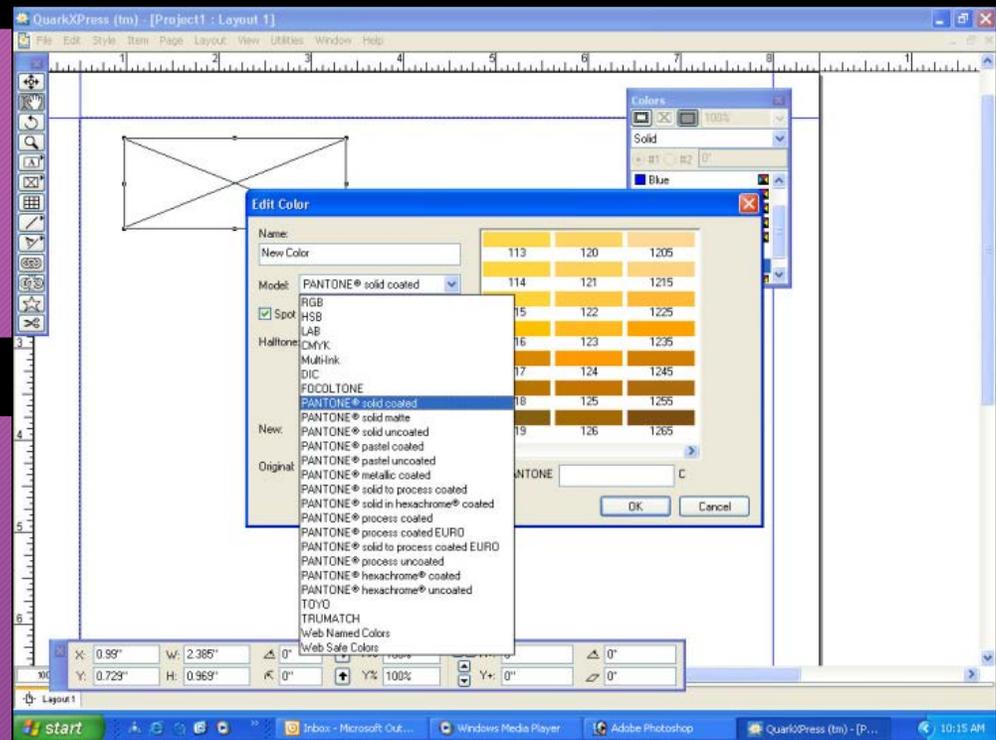
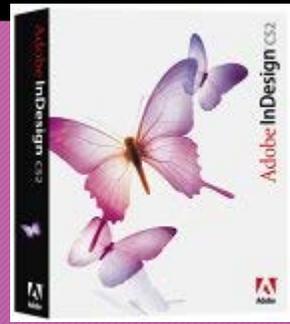
CREATE



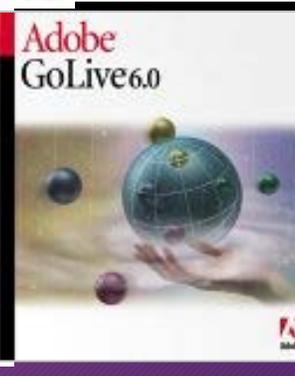
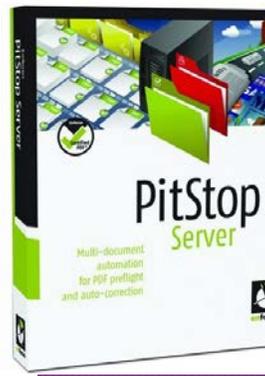
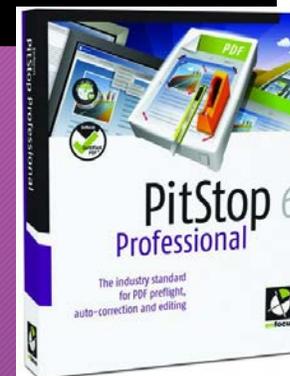
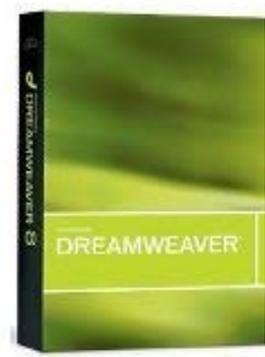
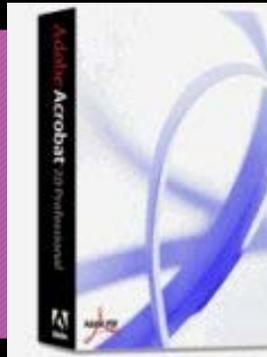
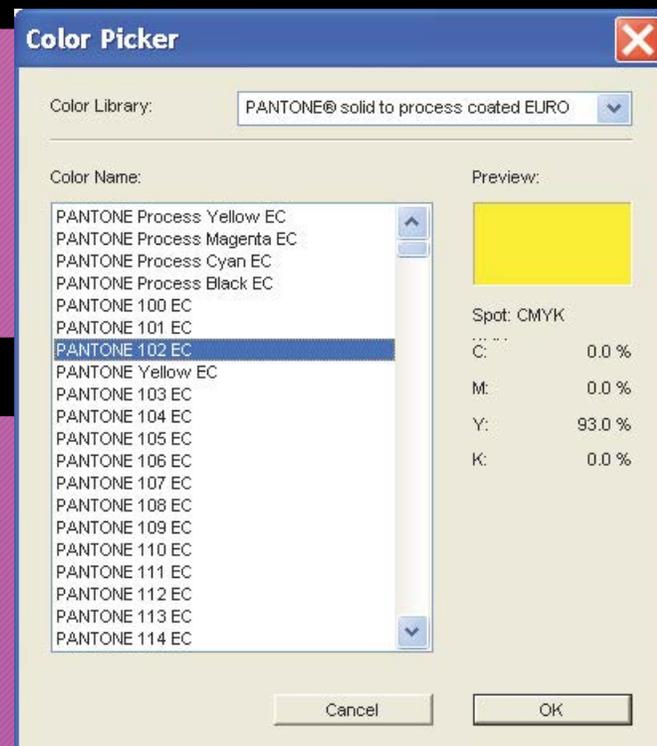
CREATE



ASSEMBLE



DELIVER



OUTPUT

- Understanding the process.



Xerox – Color Printers



Epson – Wide format Printers

Agfa – Imagesellers



OUTPUT

- Understanding the process.



Heidelberg - Offset Press

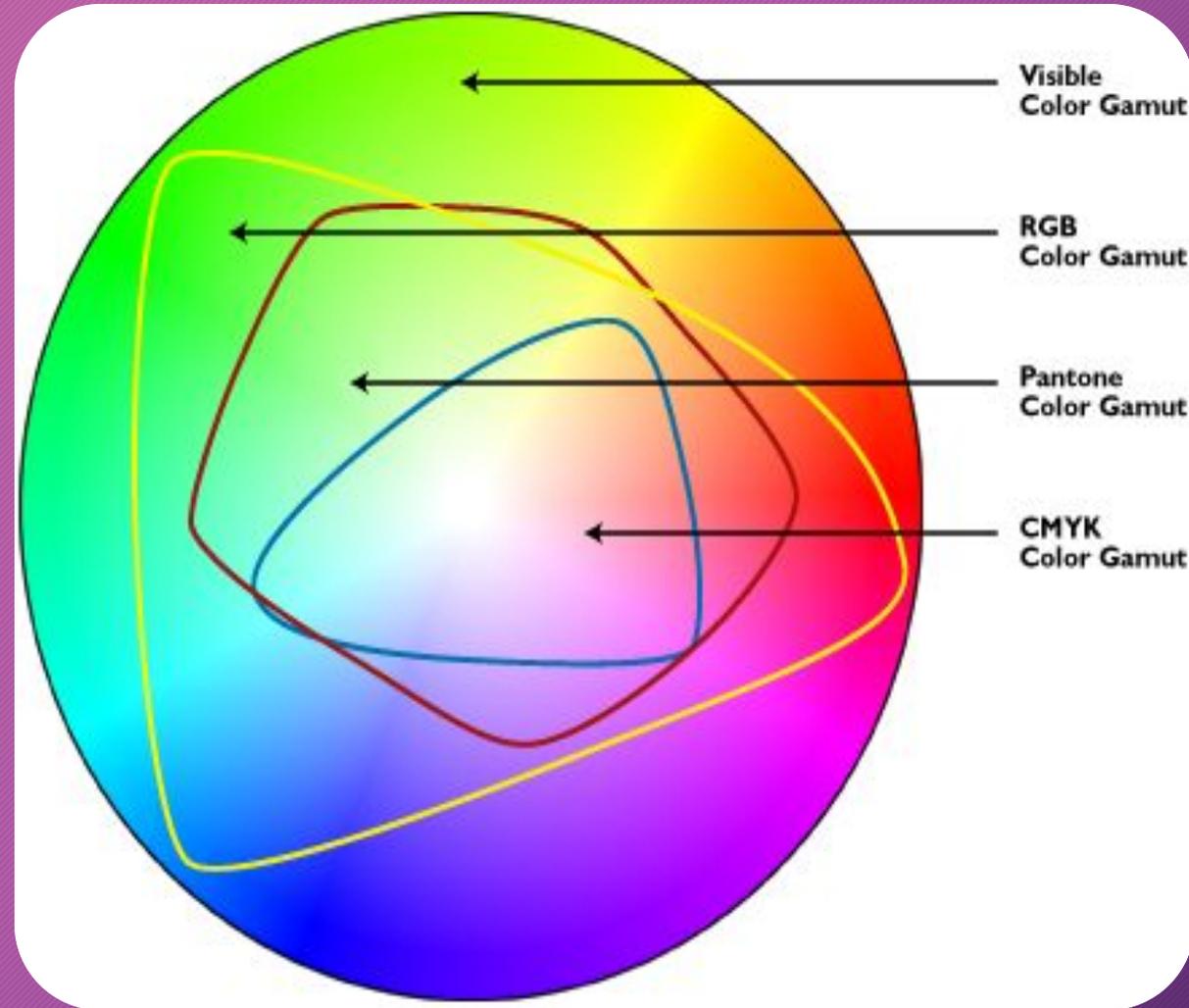


dorisbrown.info

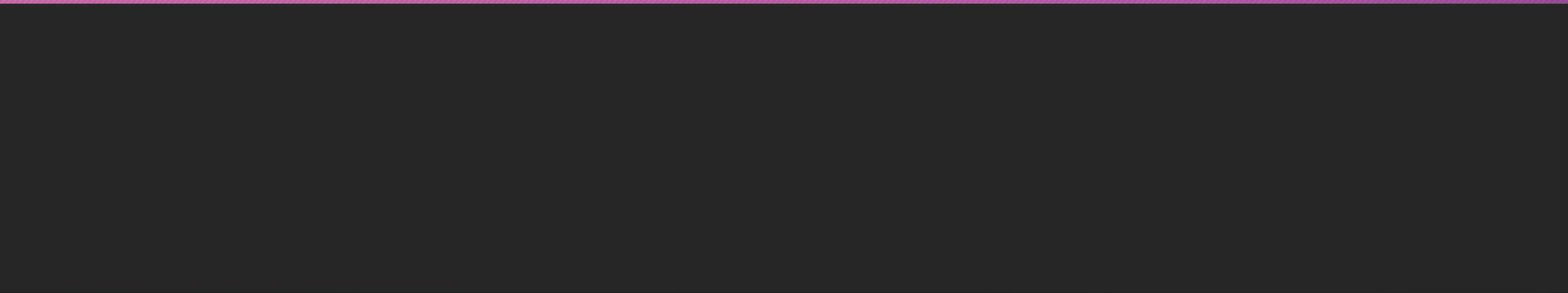


COLOR SPACES

- Gradation
of the Color
Spaces:
1. Visible Space
 2. Screen
 3. PANTONE®
 4. Print

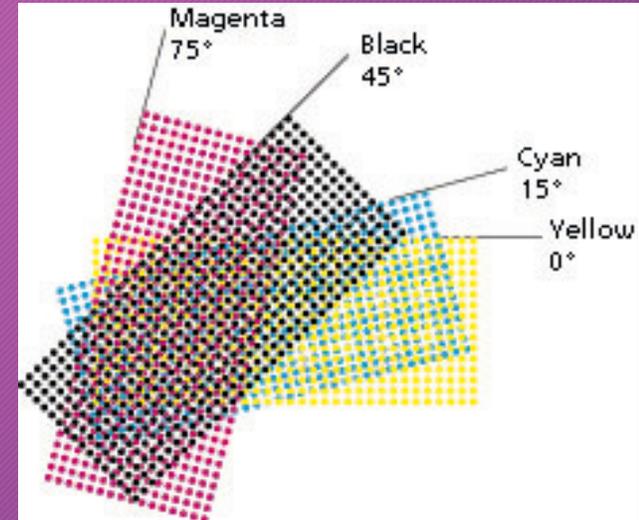
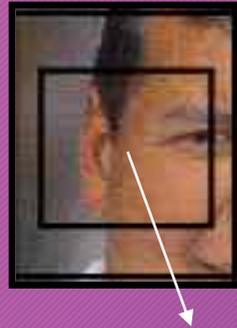


Printed Color?



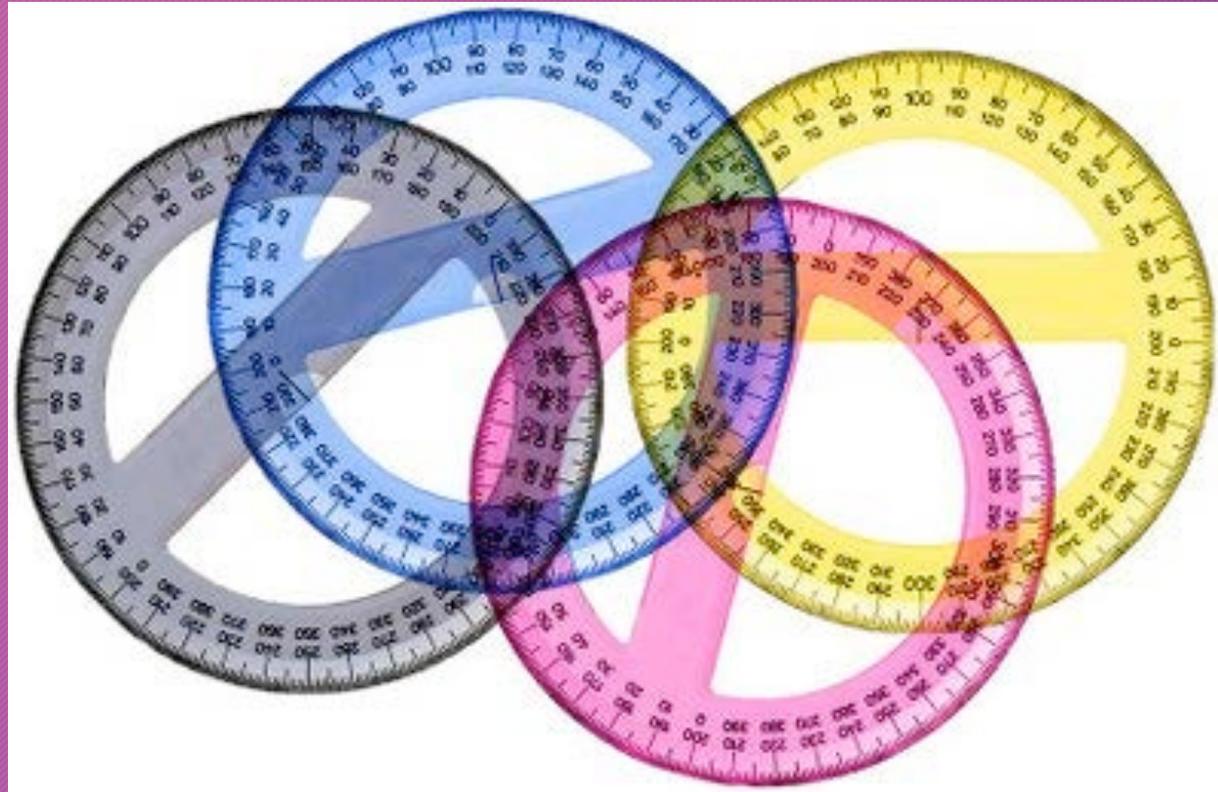
Simulation of continuous tone color

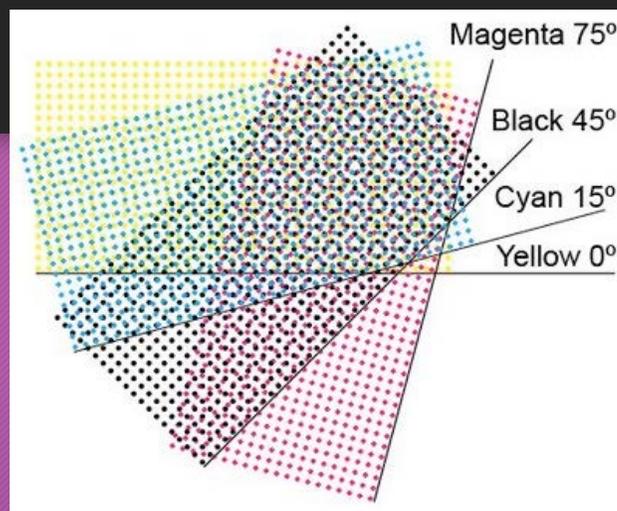
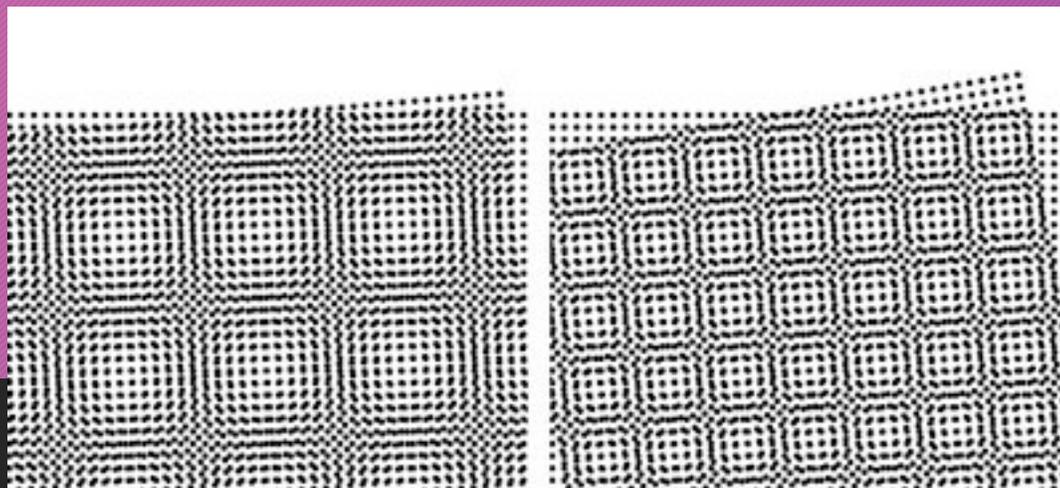
Setting the angle of the halftone screens differently, creates the the illusion of continuous tone color.



Simulation of multiple tones of color

Using halftone screens to create the percentage of each primary color and overprinting we achieve not only grey, but also the simulation of multiple tones of color.





Next Session

Color and Printing

Generic print specifications

Digital Print

What drives specifications/Standards

Print Production for Designers

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917.597.1891