• 3D Color: Hue, Value, Chroma

• Charting Color Harmony and Color Structure

A strategy for looking at color structure in composition
Three dimensions of color

– Just as a point in space can be defined by its position in the three special dimensions (height, width, depth), color also has its own three dimensions. Any single color can be described by its three dimensions.

• Hue
• Chroma
• Value
Three dimensions of color - Munsell’s color model
Three dimensions of color

• Hue
  – Commonly called “color” by non-artists and non-designers. This is the nameable color – red versus blue versus yellow.

• Chroma
  – Saturation, Intensity and sometimes “brightness” – though these last two terms are easily confused with “Value”. Purity of color.

• Value
  – The lightness or darkness of a color – that is, how close to white and how close to black is it?
Three dimensions of color

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• Chroma
• Value
Three dimensions of color - Munsell’s color model
Three dimensions of color - Munsell’s color model
Three dimensions of color
- Munsell’s color model
  - Perspective view from top: side view: top view.
Three dimensions of color

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• Value
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Hue

- Commonly called “color” by non-artists and non-designers. This is the nameable color – red versus blue versus yellow.
Hue Variations

- The most prominent and consistent difference between all of these samples is their HUE.
- Chroma is consistently high.
- Value, however changes too — yellow is high value, blue is much lower in value.
Chroma

• Saturation, Intensity and sometimes “brightness” – though these last two terms are easily confused with “Value”.
• The purity of the color.
• The proportion of hue to neutrals.
Value

- The lightness or darkness of a color – that is, how close to white and how close to black is it?

- *High* Value – lighter, closer to white.

- *Low* Value – darker, closer to black.
Value Scale

- A value scale is to value what a color wheel is to hue.

- It is a graphic representation of the full range of values from white to black.

- Often a value scale will be divided into even steps. For our charting and color planning we use a 9-value scale, with black at the bottom – numbered “1” and white at the top, numbered “9”.
The most prominent difference among these colors is their value.

- Hue is constant (though the lower chroma samples may tend more blue).
- Chroma is roughly constant.
Constant hue chart

7.5YG

What these colors have in common, is that they all are the same hue.

Chroma varies from left-to-right.

Value varies from top-to-bottom.
Chroma Variations

- The most prominent difference between these colors is their CHROMA.
- Hue is constant (though the lower chroma samples may tend more blue).
- Value is constant
Chroma Variations

• The most prominent difference between these colors is their CHROMA.

• Hue is constant.
• Value is constant.
The main goal of these charts is to actively study and see how other designers have used color.

We want to be more perceptive of the strategies that designers use to create impact and establish moods... ...to guide the viewer’s eye and to unify a composition.
Proportion Study

- *Which* colors are used?
- In what *proportions*?
Milton Glaser, p. 158

**The Cook**

Harry Kressing

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Scheme: ______________
Milton Glaser, p. 158

![Diagram of color wheel with annotations]

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**Scheme:** Monochromatic
Color Charting

- The charts provide a way of looking at how the colors used are related to one another — thus we often better see why the colors were selected.
Color Charting -- What is it?

- Color charts provide a way to analyze a color scheme in terms of color relationships. This system of notation quickly represents the prevalent colors and how they are related to one another.
- The general color strategy can be discerned easily once the charts are familiar.
- The chart records information about all three dimensions of color – hue, value, and chroma.
Color Harmony Charting

- Color Wheel - identify Hue and Chroma
- Value Staff - values used
- *Size of circles* indicates proportion

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Monochromatic
• Chart major colors only (10 max)
• Lines connect H/C with V
• Limitations: note colors used
• Dominant: note the dominating H, C, & V

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Color Harmony Charting

- Monochromatic
Color Charting

- The main portion of the chart is a color wheel – so it is already quite familiar.
- The second portion is a value scale.
- The third section is a table that lists the color traits that are present, and those that dominate the color harmony.

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![Color wheel diagram](image)
Munsell color wheel
Based on 10 major hues.

Note 1 & 2 letter hue abbrevs.
Value Scale

What values are used? (circle each region used)

How prominent is each value? (size of circle)
What HUEs are present?
What CHROMAs are used?

Color wheel
Neutral at center
High Chroma at outer edge

What HUEs are present?
What CHROMAs are used?
What CHROMA are used?

Neutral at center
High Chroma at outer edge
Limitations:
typically a design uses only a “limited palette” of colors. Here we analyze the color traits used in the design.

Dominants:
Typically a design will have colors that provide the foundation for all the other colors -- a dominant.
• Scheme:
As we become familiar with more color schemes, we will name the scheme, or color structure, used to organize and select the colors used.

• Monochromatic, Complementary, Analogous, Triadic, Split-complement, Neutral, Color Saturation, etc.
Milton Glaser, p. 158

- What hues are used here?
- What values are used?
- What chromas are used?
The Cook
Harry Kressing

- Limited To
  - Value: 4, 1, 9
  - Hue: G, N
  - Chroma: MH, N
- Dominant
  - Value: 4
  - Hue: G
  - Chroma: MH

Scheme: Monochromatic
Value: use numbers - 1-9 according to your value scale.

Hue: use initials for hues around the color wheel.

(R, RO, O, YO, Y, YG, G, BG, B, BV, V, RV)

N = Neutral

Chroma: H= High, MH = Middle High, M=Middle, ML= Middle Low, L = Low, N = Neutral.

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Scheme: Monochromatic
Charting Set 1
For Next Class:

- Chart:
  Fig. 10.23
  (p. 165; Rothko)

- Fig. 9.13
  (p. 131; Matisse)

- Fig. 11.5
  (p. 178; Glaser)

- Fig. 9.23
  (p. 138; Vuillard)

- Fig. 10.19
  (p. 161; Bonnard)

- Read: Ch 3, 24-38
Mark Rothko
p. 154, f10.21
Blue, Orange, Red.
Mark Rothko p. 148
Edouard Vuillard
Breakfast
f 9.25 p. 139
1) identify the colors present (the palette)
2) simplify palette to about 9 colors or fewer

(group very similar colors and/or eliminate minor colors. However, be sure to keep significant accent colors, even if proportions are small. (e.g. BV and RO here.)
Henri Matisse (French, Fauvist)

Red Interior, Still-life on a Blue Table.

Oil, 1947

The fauves ("wild beasts") were an expressionist alternative to the Cubist movement that began at roughly the same time, around 1905 or so.

They were called fauves because of their arbitrary use of intense color — colors selected with no necessary connection to nature. That is, non-realist color.

Matisse was one of the leaders and continued to explore expressive, emotional, playful color compositions throughout the first half of the 20th century.
Fig. 9.13/p. 131
Henri Matisse (French, Fauvist)
Red Interior, Still-life on a Blue Table.
Oil, 1947
Bonnard learned how to see color from Impressionists such as Monet. In a sense, Bonnard is Monet on steroids — color steroids. Color is fragmented and forms are diffuse, as in many of Monet’s paintings.

But Bonnard amplifies chroma and builds areas of color — color massing that create a more dynamic composition. When charting Bonnard, identify ~8 major colors…not all of them.
Pierre Bonnard

Nude in a Bathtub

1937

(post-)

Impressionist
For next Class: chart color and describe mood/connotations.

10.27 / p. 171 Wolf Kahn, *Lilac and Green*

10.10 / p. 155 Jan van Eyck, *Arnolfini Marriage*

9.8 / p. 128 Rufino Tamay, (living room)

a) Chart each design

b) Describe the mood, attitude, character or connotations of the design. Describe how color use might be contributing to that mood.
Milton Glaser, p. 158

The Cook
Harry Kressing

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Scheme ___________________
Value – Core of the Harmony

• Value relationships are the core of visual design.
• In general, a designer needs to pay attention to value distributions and dominances before giving attention to hue and chroma decisions.
• It is a good strategy to begin a color harmony by establishing a clearly dominant value – this acts as a foundation for the entire harmony.
• Many artists can be characterized by their dominating reliance on value. (Tonalists)
Charting a Color Scheme –
Dominant Value

- Assess and record the values
- Look for the dominant – or *most common value*. This may be a single, flat area of value, or it may be several very *similar* values throughout the design.
- Place a fairly large circle on the value scale at whatever value dominates the design.
- The size of the circle suggest how prominent that value is.
Charting – Subordinant Values

• Assess subordinate values – those that are less common.
• For each distinct value or group of similar values, draw a circle on the value staff at the position representing that value.
• The size of the circle should be roughly proportional to the first, large “dominant value” circle. That is, if the value you’re charting covers about half of the area covered by the dominant value, the new circle should be about 1/2 the size of the first circle.
• Continue until all of the major values are charted.
Every color harmony involves a “limited palette.”

This simply means that the designer intentionally uses a small selection of colors, rather than all of the colors that a designer could specify or apply.

The table restates the information on the color wheel and value staff. There is nothing new here, we are only emphasizing a different aspect of the color structure.

There is a row for each dimension of color.
“Limited To”

- **Hue row**: list all of the hues used in the color scheme.
  
  (R – red, RO-Red Orange, RV – Red Violet, V, BV, B, BG, G, YG, Y, YR (or O), RO…)

- **Value row**: list the number of each of the values used in the scheme. 1 – Black… 9 – White, etc.

- **Chroma row**: list the chromas used
  (H = high, MH = middle high, M = Middle, ML = Middle Low, L = Low, N = Neutral).
• Every dimension of the color scheme needs a foundation – we call this the dominant.

• A color scheme can have dominant value, a dominant hue, and a dominant chroma.

• The other values, hues and chromas provide contrast, and variety – they are subordinates and accents.
**Dominant**

Each cell in the “dominant” column should have just one item in it.

In the dominant hue cell, you list the hue that dominates.

In the dominant value cell, list the number of the dominant value(s) (it may be a group of 2 or 3 clustered values),

- In the dominant chroma cell, list the H, MH, M, ML, L, or N for the dominant chroma in the design.
- In general, the dominant is that which is most prevalent – there is more of it than anything else.
Dominant

• On your color wheel and value staff, the dominants should be evident by the size and positions of circles.
• You can add a dashed line to highlight the axis of the dominant hue and the dominant value.
• The dominant chroma requires looking for the circle of the color wheel that is most crowded – that is, the level of chroma that has the most circles on it.
• A dashed circle can highlight the dominant chroma level.
Monochromatic
Color Harmony Charting

- Color Wheel - identify Hue and Chroma
- Value Staff - values used
- Size of circles indicates proportion

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- Chart major colors only (10 max)
- Lines connect H/C with V
- Limitations: note colors used
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Scheme: Monochromatic
• Limited Palette
• What hues are used here?
• What values are used?
• What chromas are used?
Monochromatic coloring chart:

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Scheme: Monochromatic
For Next Class: 2nd Charting Set

- Complete a color chart for:
  - Fig. 9.3 (p. 123) Vinotherapie Spa
  - Fig. 5.8 (p. 56) Malevich
  - Fig. 11.3 (p. 174) Infiniti Ad
Fig. 9.3 (p. 123)
Vinotherapie Spa
Fig. 9.3 (p. 123)
Vinotherapie Spa
Fig. 5.8 (p. 56)
Malevich
Fig. 5.8 (p. 56) Malevich
Transforms every drop of fuel into pure intensity.

The next-generation VQ VVEL engine in the all-new G Coupe is the most advanced engine ever produced by Infiniti. It features a rather ingenious valve control system designed to unleash its class-leading 330 horsepower immediately. While using less fuel and producing fewer emissions, you’ll experience nothing but intense performance, no matter where your foot rests on the pedal. Learn more at Infiniti.com.
Fig. 11.3 (p. 174)
Infiniti Ad

Transforms every drop of fuel into pure intensity.

The next-generation VQ37VET engine in the all-new G Coupe is the most advanced engine ever produced by Infiniti. It features a rather ingenious valve control system designed to unleash its class-leading 330 horsepower immediately. While using less fuel and producing fewer emissions. So you'll experience nothing but intense performance, no matter where your foot rests on the pedal. Learn more at Infiniti.com.

The all-new 330-hp G Coupe. Intensity captured.
Ellinger – Color Structure & Design

- On reserve for this course in the library.
- See chapters 5 & 6 for intro to charting topics.
Local Color vs. Atmospheric Color

- Architects, Interior Designers and stage designers, especially, must distinguish between the colors that are specified, and the colors that the viewer sees.

- Light, shadow, and surfaces characteristics alter color dramatically, generally expanding the range of color in the design.

- When charting from an existing design, chart what you see – that is, look for the highlights, shadows, reflections and so forth. See what colors are created by the forms, shadows, surfaces and illumination...
Local Color vs. Atmospheric Color

...Then proceed to assess the local colors – the colors of the surfaces, materials and paints used in the setting.

Mark local colors in different colored pen/pencil so that local and atmospheric colors are distinguished.

Usually there will be fewer local colors than atmospheric colors.
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**Scheme**: (Dbl Split Complement+)
For Next Class: (last) Charting Set III

- Complete a color chart including limitations and dominances for:
  - Fig. 3.18 (p. 35) Monet
  - Fig. 3.19 (p. 35) Monet
  - Fig. 5.7 (p. 55) Leonardo
  - Fig. 11.11 (p. 181) Hacker kitchen ad

(last) Charting Set III for Next Class
Monet p. 31

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**Scheme**: Split Complement