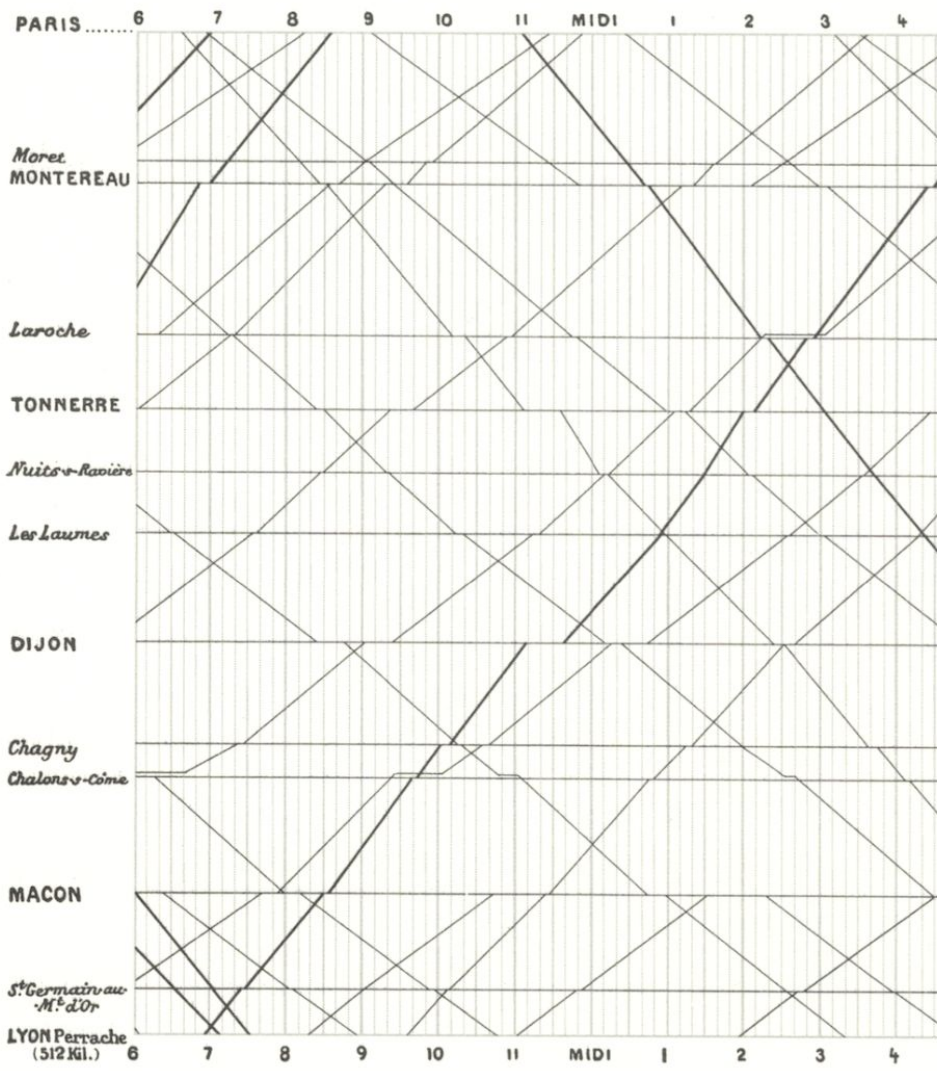

Visualization as Science 2

A Samuel Pottinger
Stat 198: IDSV
Feb 12, 2025

Today

> Gestalt principles: how we perceive collections of glyphs together.

Group activity: building with gestalt principles.

A closer look at color vision: components of color and perceptually consistent color schemes.

Gestalt principles: **introduction**

How we **pre-attentively** perceive **glyphs** together within scenes.

How we understand how parts form together to build a whole.

Gestalt principles: **tour**

Gestalt Rule: **Emergence**

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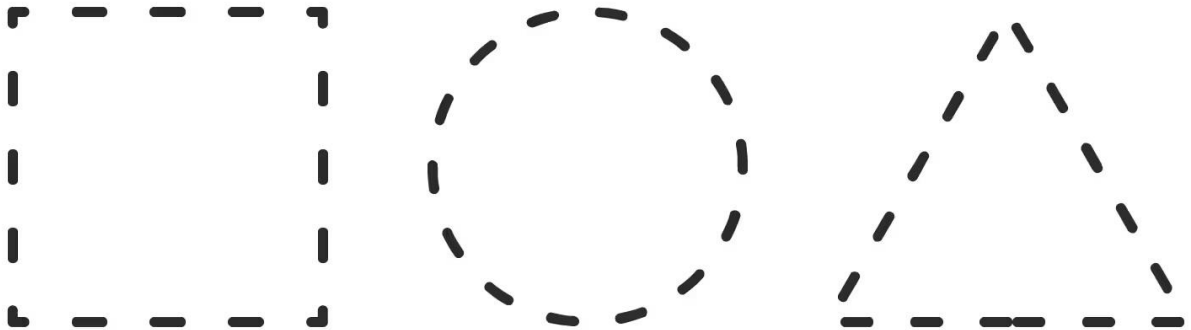
Gestalt Rule: **Closure**



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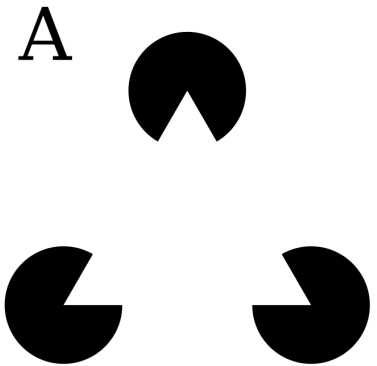
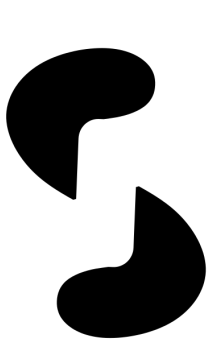
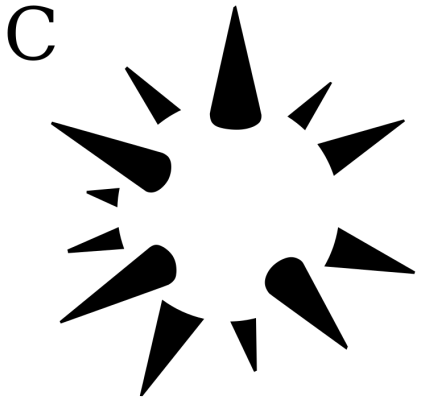
Gestalt principles: **tour**

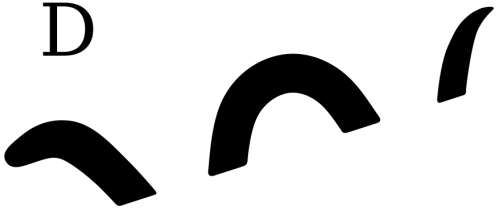
“Reification”

Activated
“negative space”



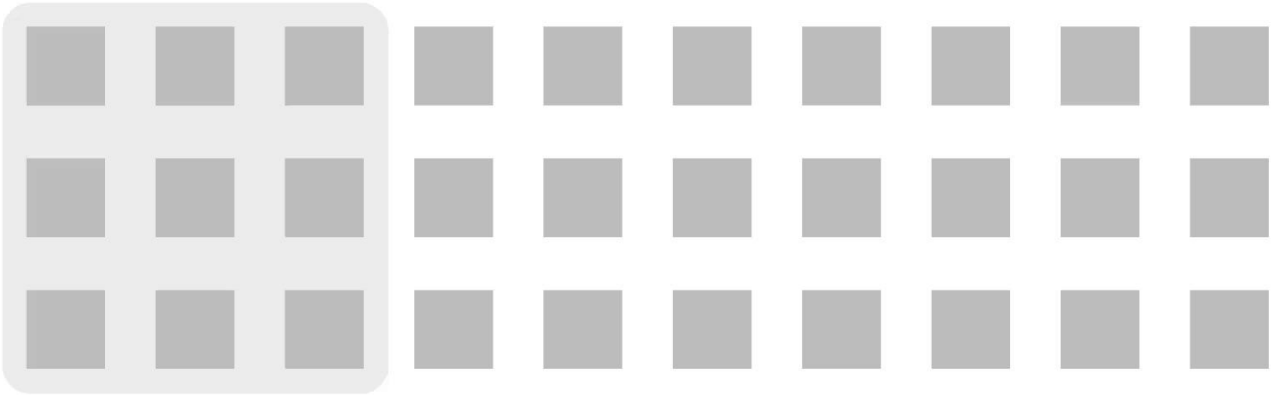






Gestalt Rule: **Closure**

Gestalt Rule: **Common Region**



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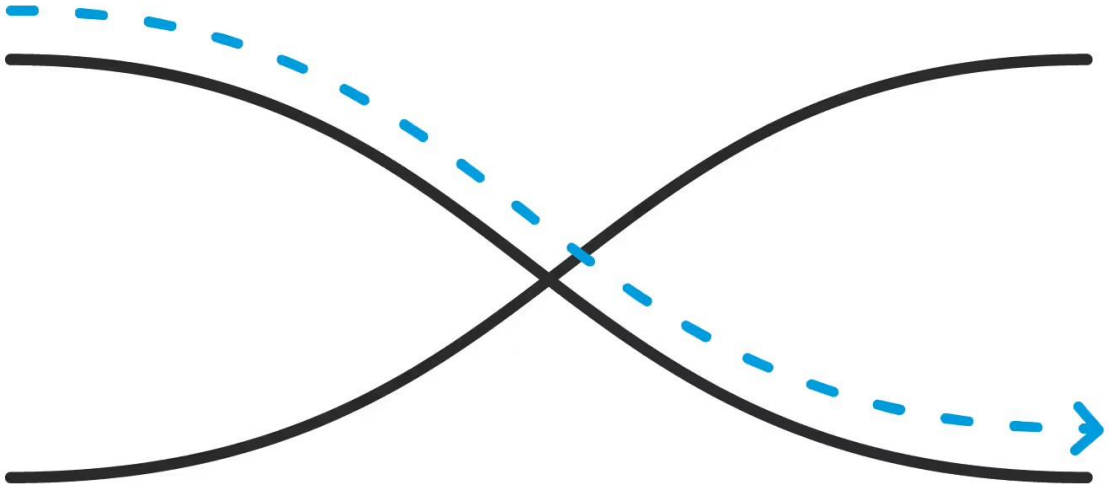
Gestalt principles: **tour**

Gestalt Rule: **Continuity**



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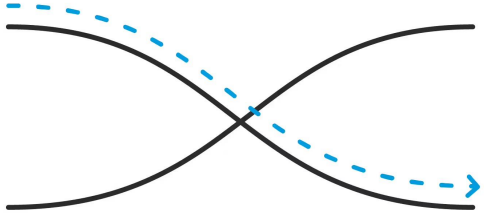
Gestalt principles: **tour**

Gestalt Rule: **Continuity**



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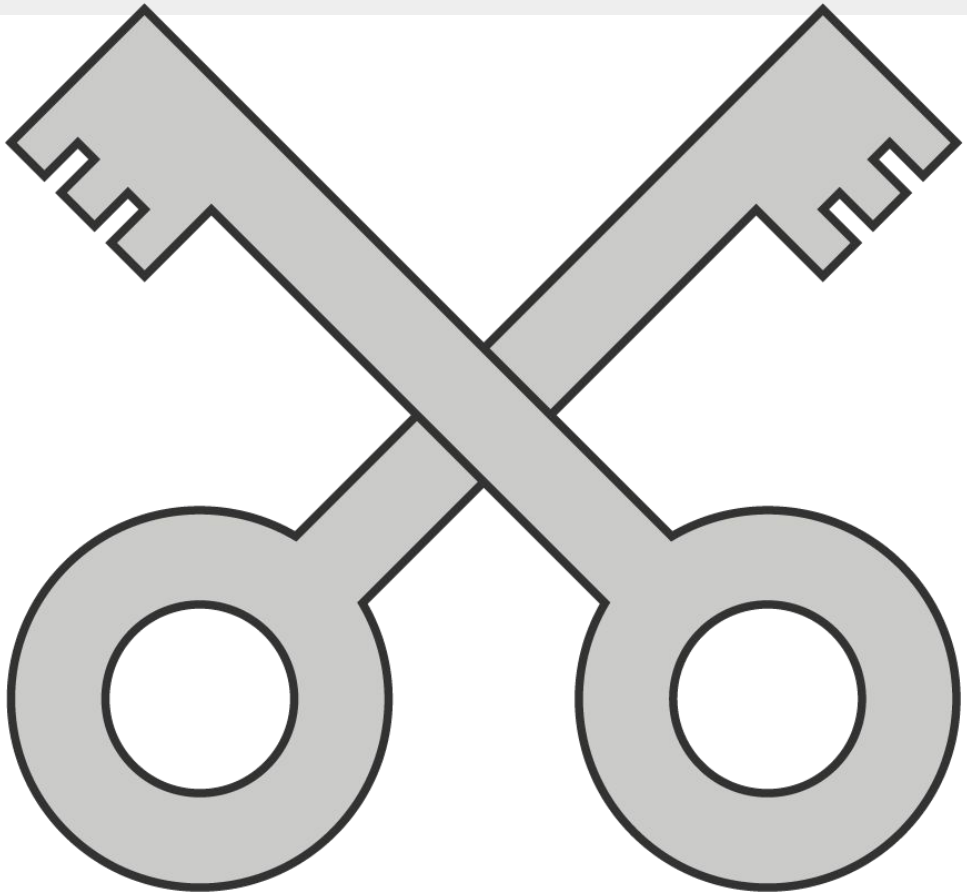
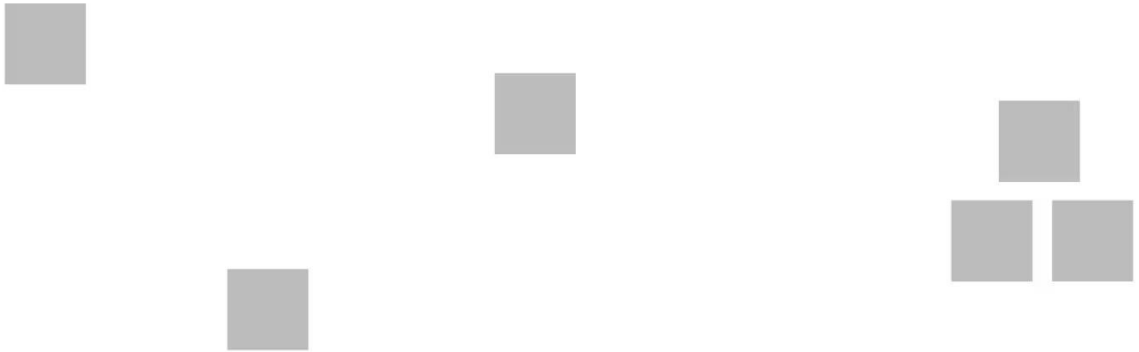


Gestalt Rule: **Proximity**



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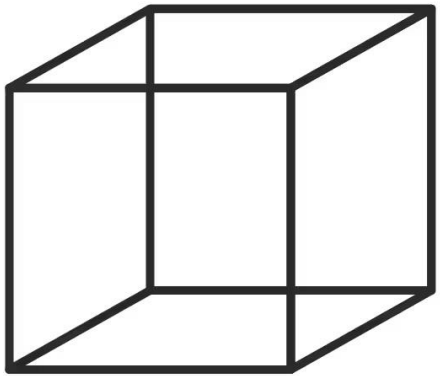
Gestalt Rule: **Multistability**



Necker Cube

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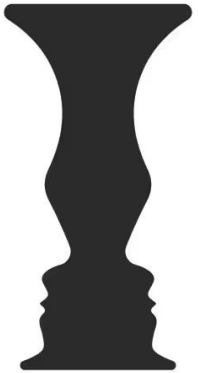
Gestalt Rule: **Figure/Ground**



Rubin's Vase

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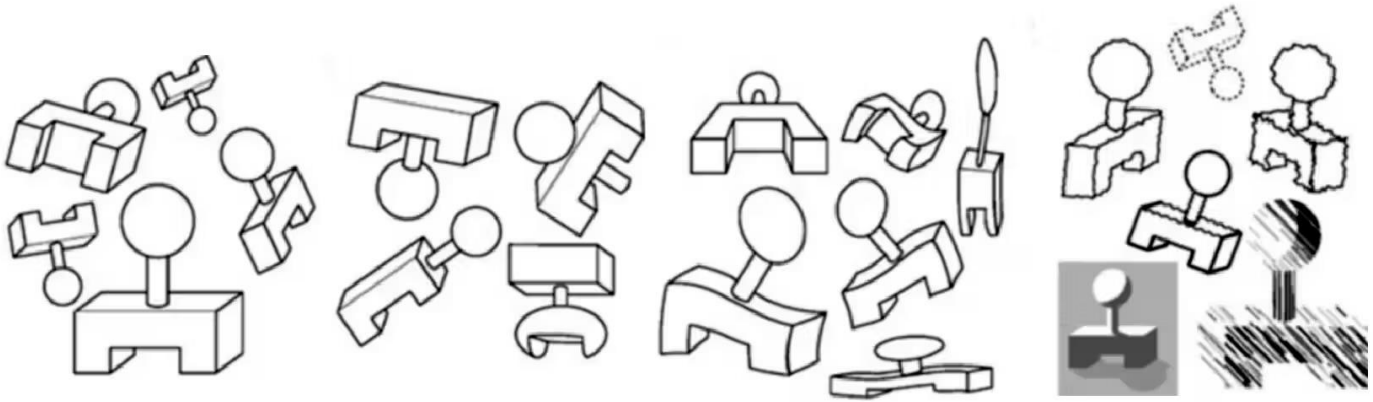
Gestalt principles: **tour**

Gestalt Rule: **Invariance**



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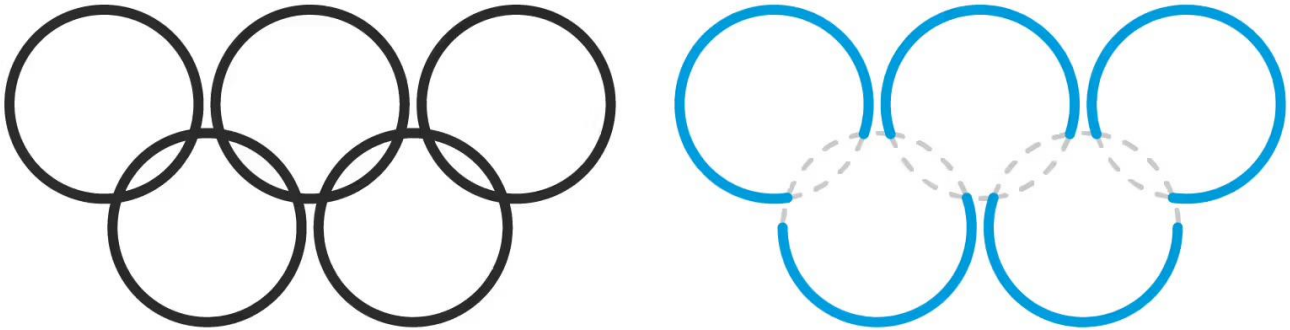
Gestalt Rule: **Pragnanz**



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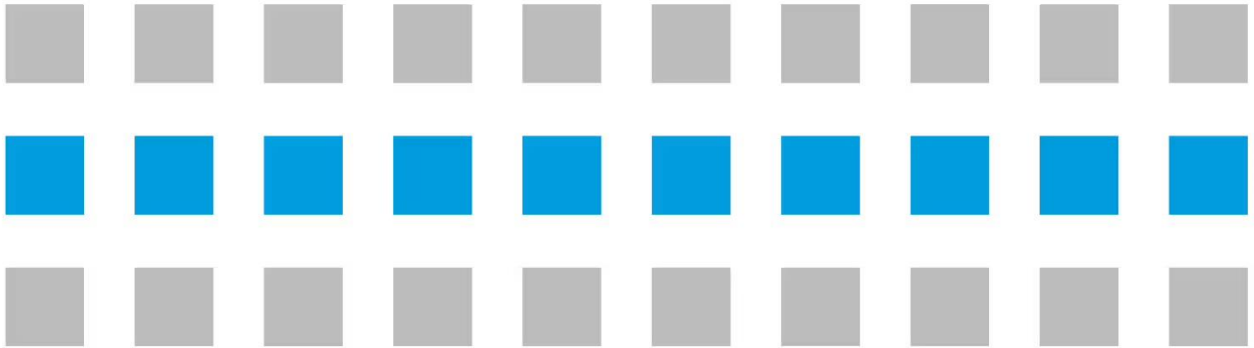
Gestalt Rule: **Similarity**



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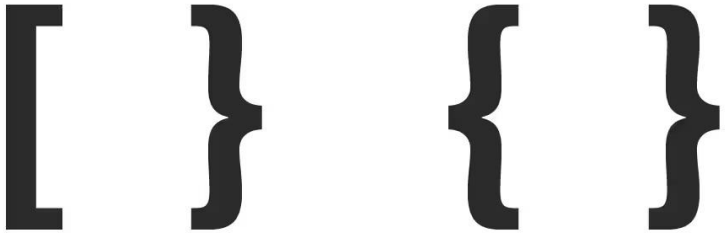
Gestalt Rule: **Symmetry**



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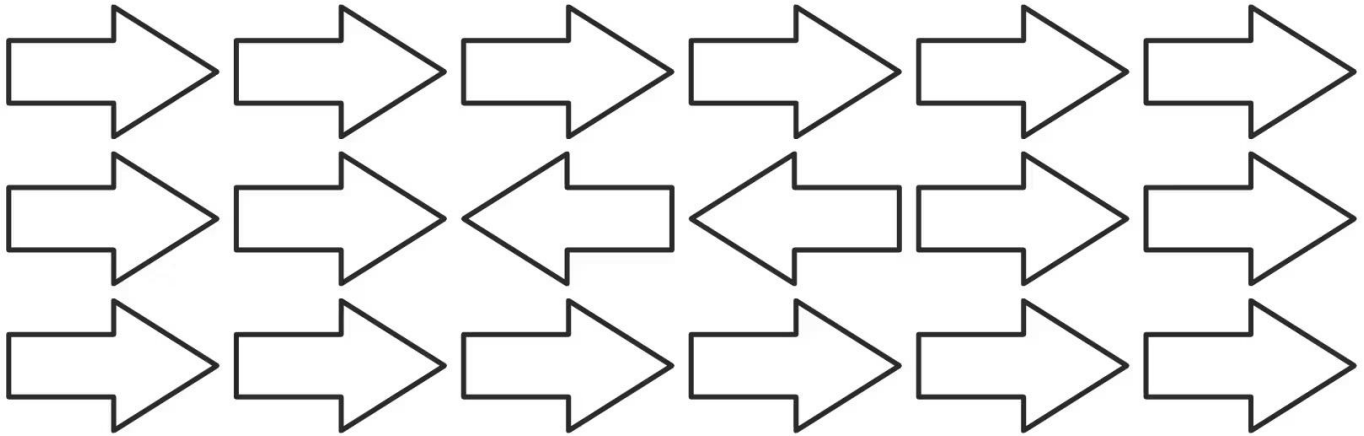
Gestalt Rule: **Common Fate**



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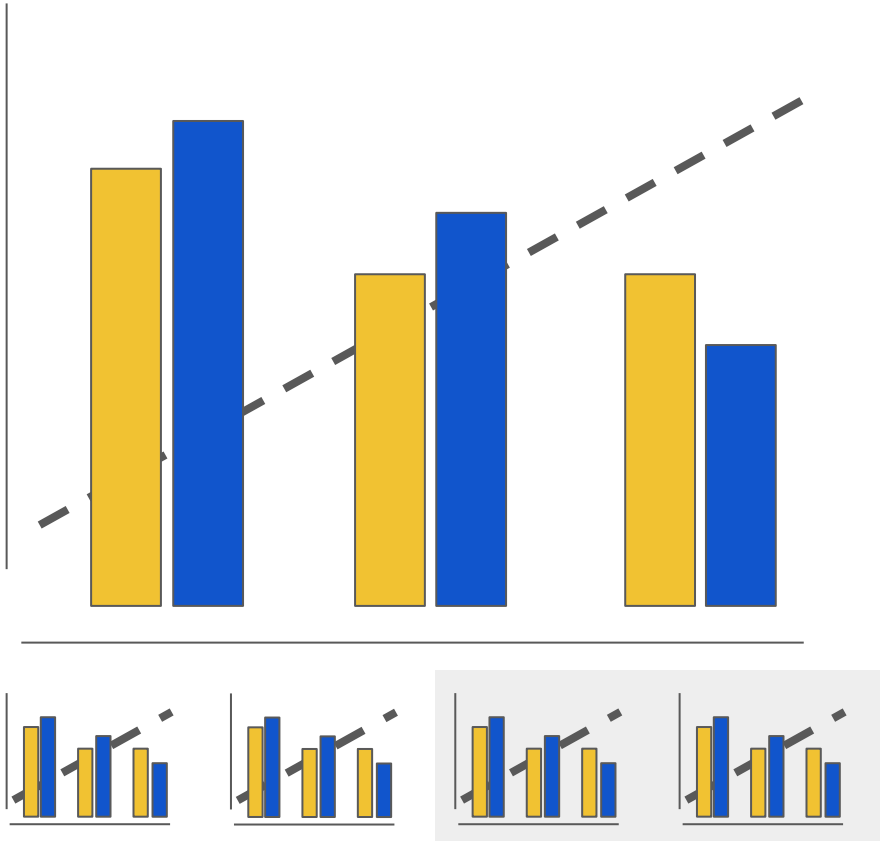
Gestalt principles: **why**



These principles tell us how to create “hierarchy” within our work. This lets us combine glyphs together to make larger structures.

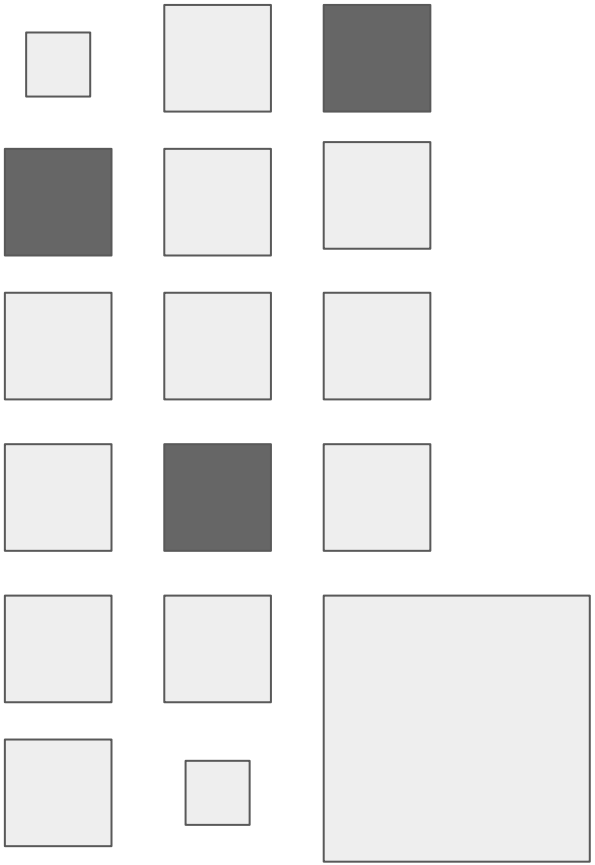
Today

Gestalt principles: how we perceive collections of glyphs together.

> Group activity: building with gestalt principles.

A closer look at color vision: components of color and perceptually consistent color schemes.

Gestalt principles: **activity**



Use these blocks to build the following:

- Proximity
- Continuity
- Similarity
- Symmetry
- Closure

For volunteers, we will screenshot and put into Zulip.

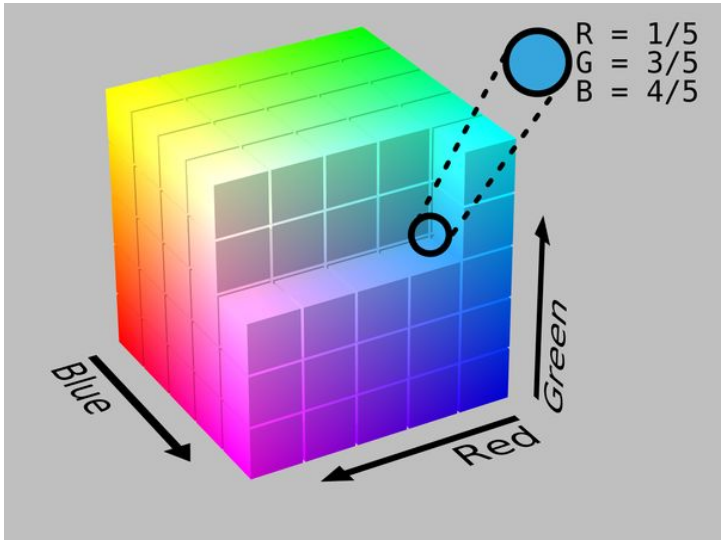
Today

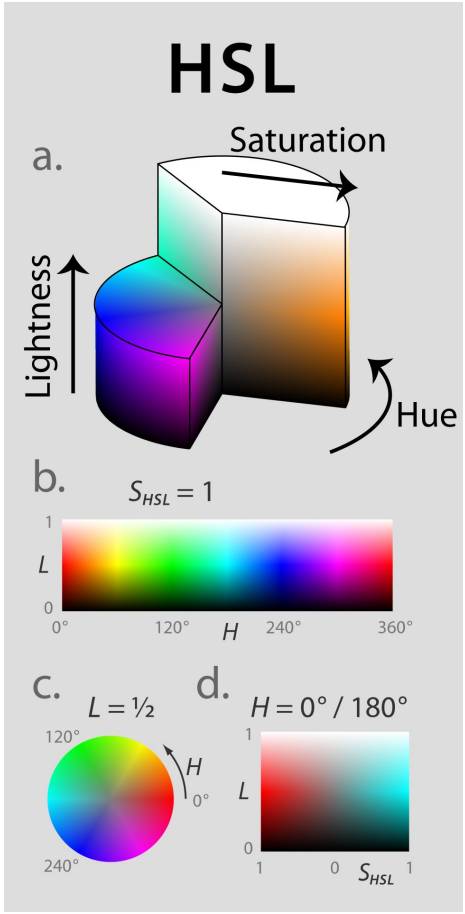
Gestalt principles: how we perceive collections of glyphs together.

Group activity: building with gestalt principles.

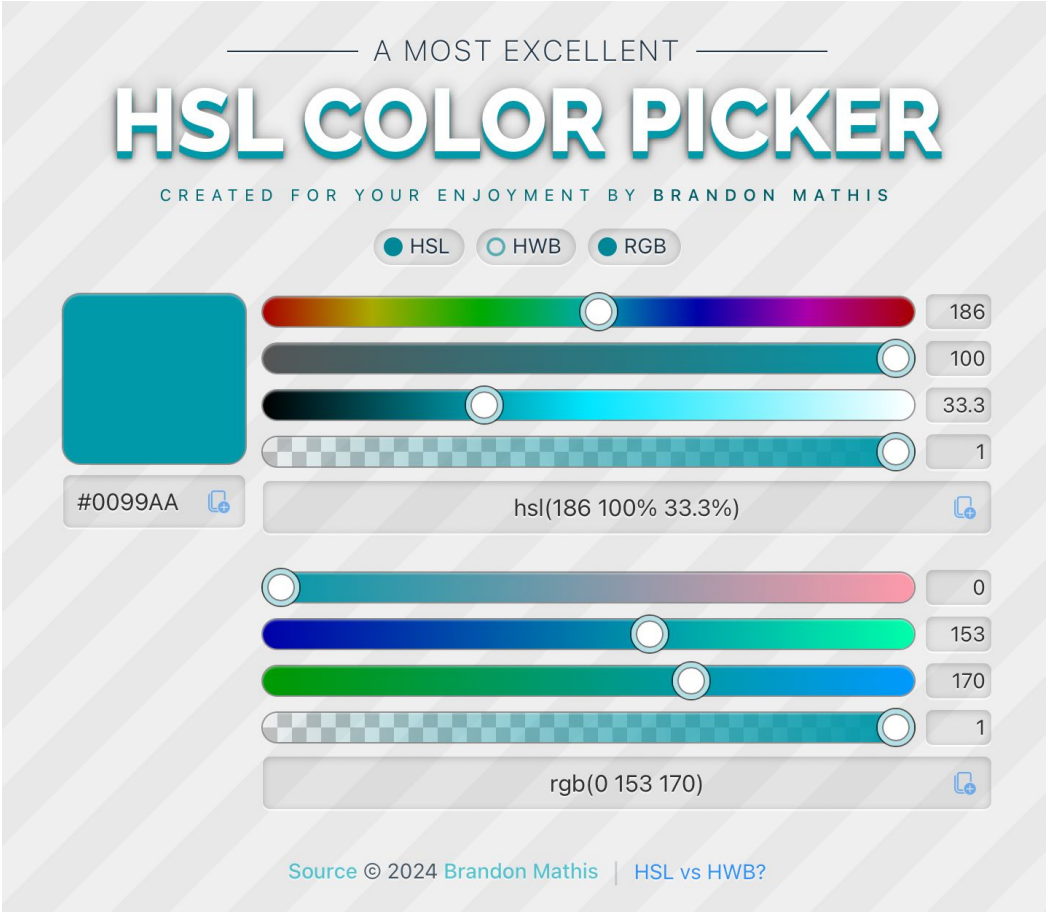
> A closer look at color vision: components of color and perceptually consistent color schemes.

Color spaces: **examples**





Color spaces: **examples**



RGB is what most code will work with. Some folks might recognize hex codes. This is what computers typically use to represent colors.

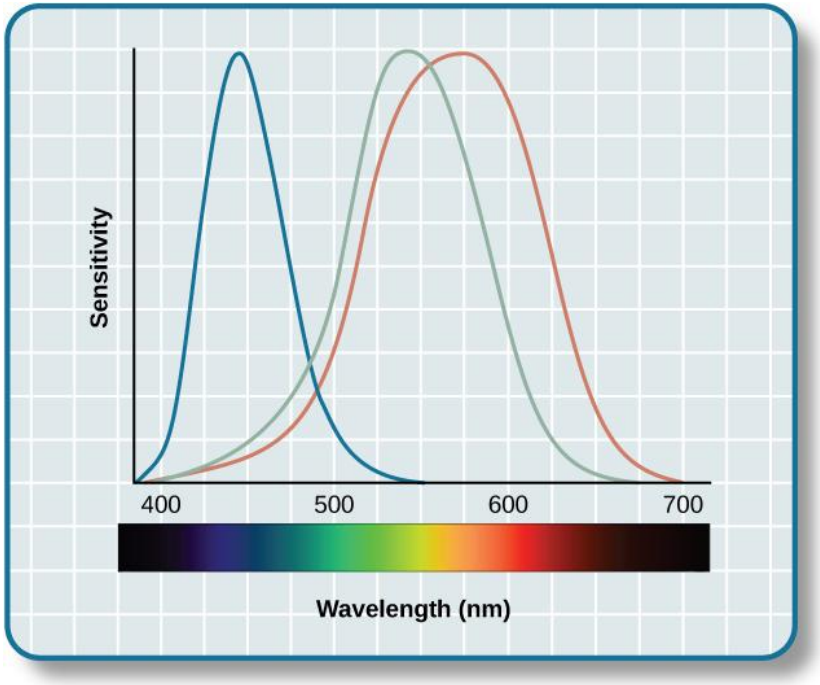
HSL is sometimes useful for building color schemes. For example, creating a shadow often involves decreasing luminance and saturation.

Color spaces: **examples**

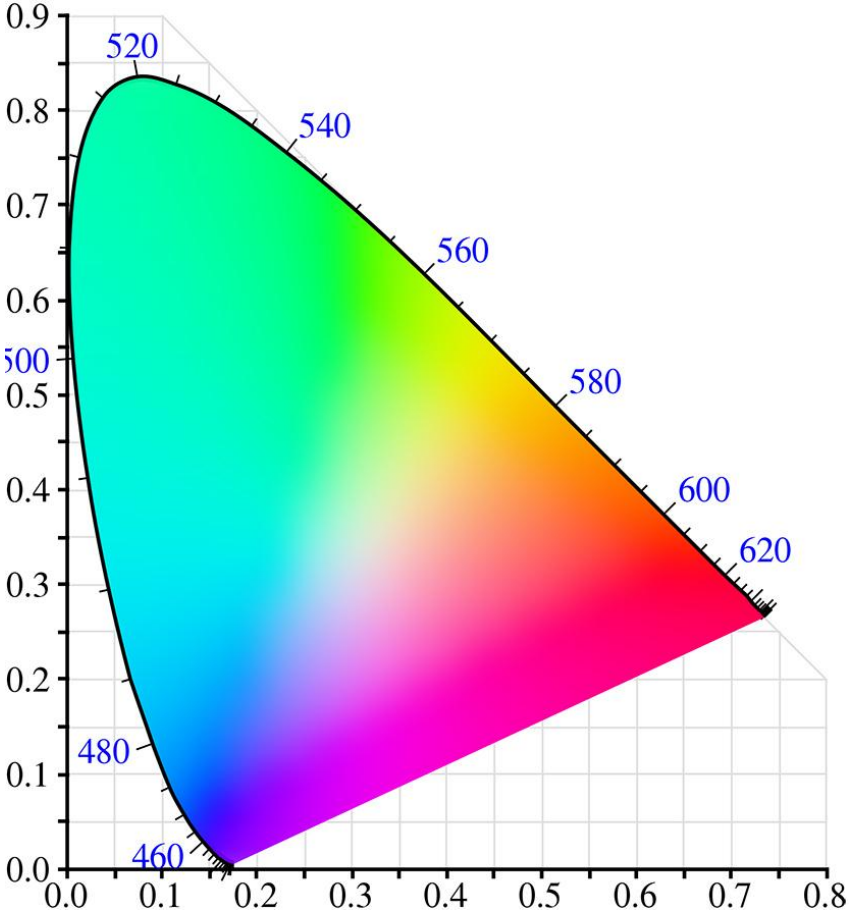
RGB is what most code will work with. Some folks might recognize hex codes. This is what computers typically use to represent colors.

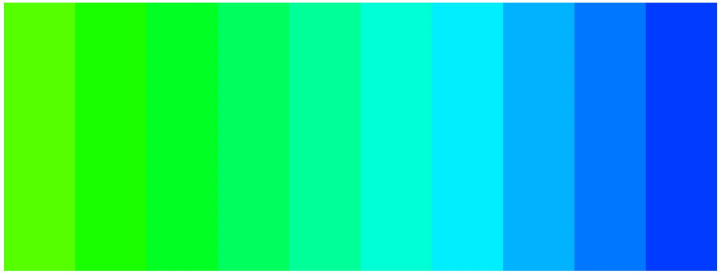
HSL is sometimes useful for building color schemes. For example, creating a shadow often involves decreasing luminance and saturation.

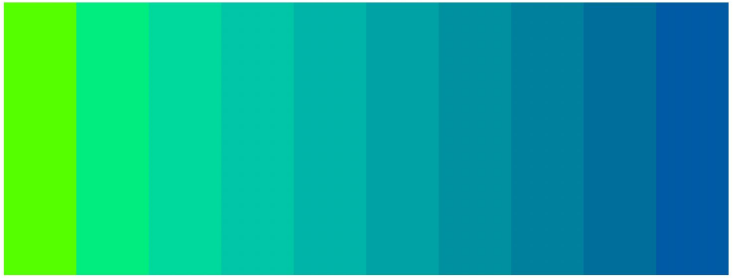
Color: reminder about **sensitivities**



Color spaces: **perceptual consistency**







CIE chromaticity diagram

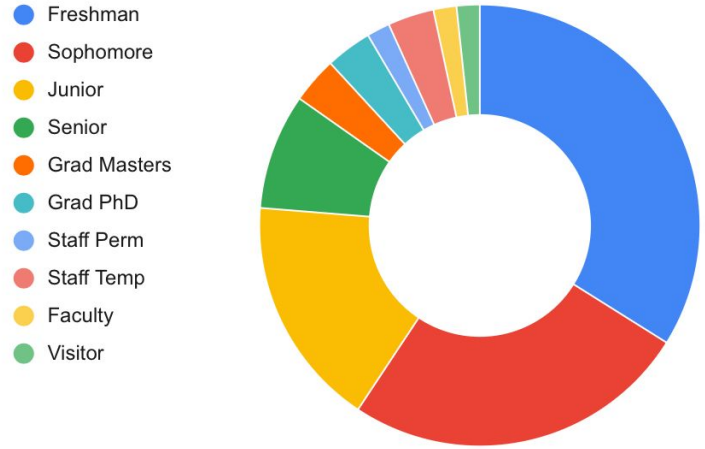
Color spaces: **other trickery**

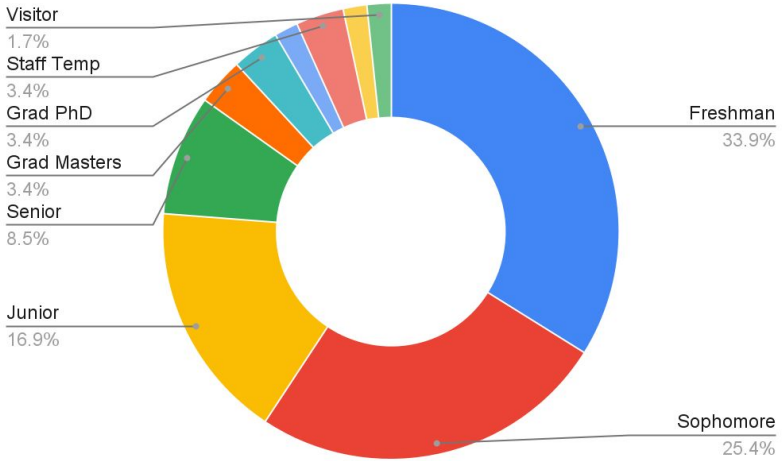
Remember that color is contextual. It depends on the background and can be influenced by glyphs nearby.

For quantitative scales: depending on the size of the glyph, we might focus more on luminance so consider keeping other values consistent.

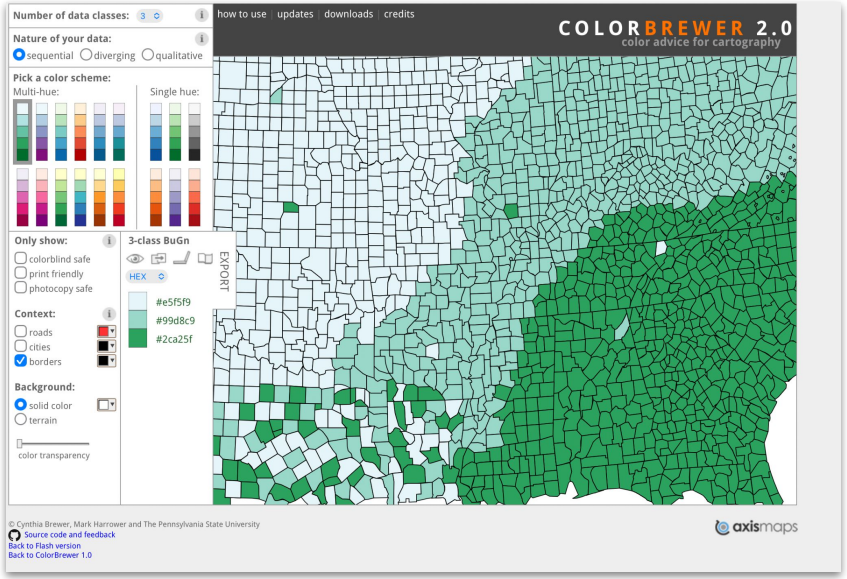
For qualitative scales: We only get about a max of 6 colors reliably.

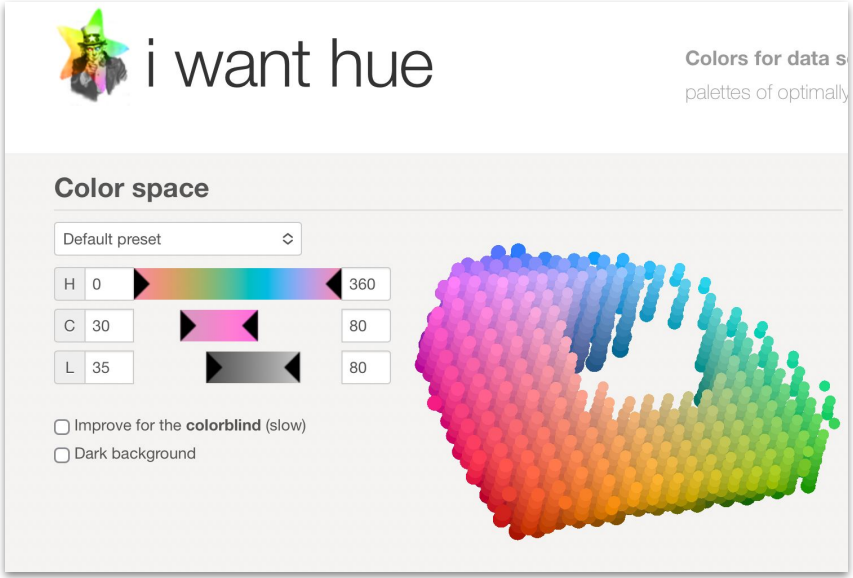
If you can **double encode** or **direct label** instead.





Color spaces: **tools**





Creating these schemes can be a bit involved, especially considering color blindness. Starting with ColorBrewer followed by I Want Hue is a good move.

Color: **general recommendations**

We are going to come back to **color-blind users** later.

Consider not using color as an encoding device and, instead, leave it for **aesthetic and branding**.

If color is needed for **quantitative scales**, consider just using luminance. Color can be used for other reasons. Try using a scheme generator like ColorBrewer.

If you have to use color as a **qualitative encoding**, use ColorBrewer or I Want Hue. Remember we only get about 6 colors reliably. An alternative is direct labeling.

When possible, **double encode** so the graphic still works without color.

What we did **today**

Gestalt principles: how we perceive collections of glyphs together.

Group activity: building with gestalt principles.

A closer look at color vision: components of color and perceptually consistent color schemes.

Classroom reminders

Please add a profile picture on Zulip (if comfortable). I'm trying to learn more names!

Exercises 5 and 6 are tied together. Be sure to complete both soon!

Office hours on Friday at 3pm. See Zulip.

Works cited

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