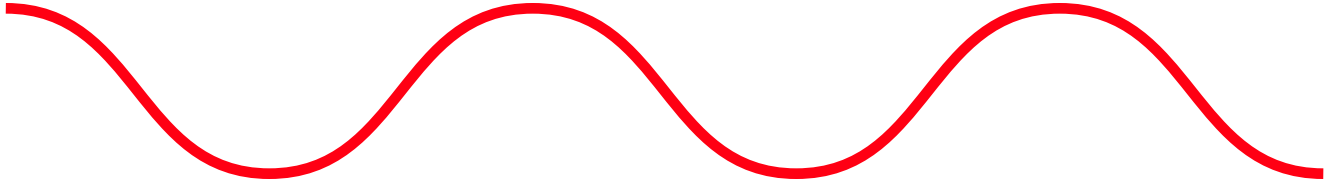


MIT Student Art Association Spring 2011

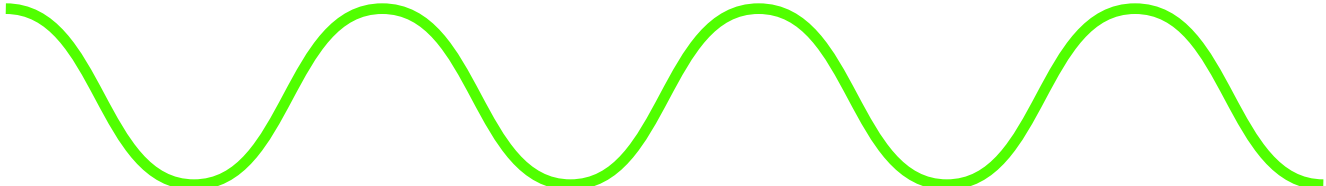
# Digital Photography

**Color**

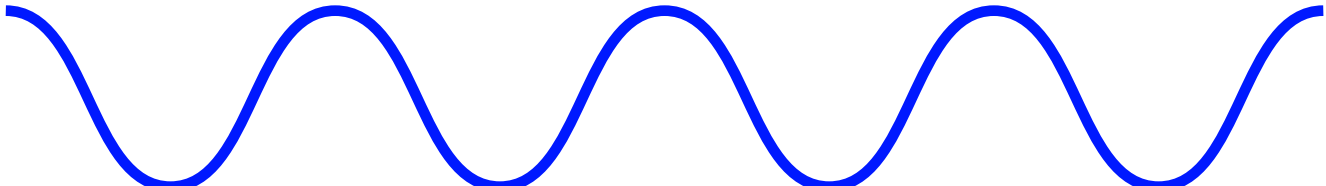
**Red** 650nm

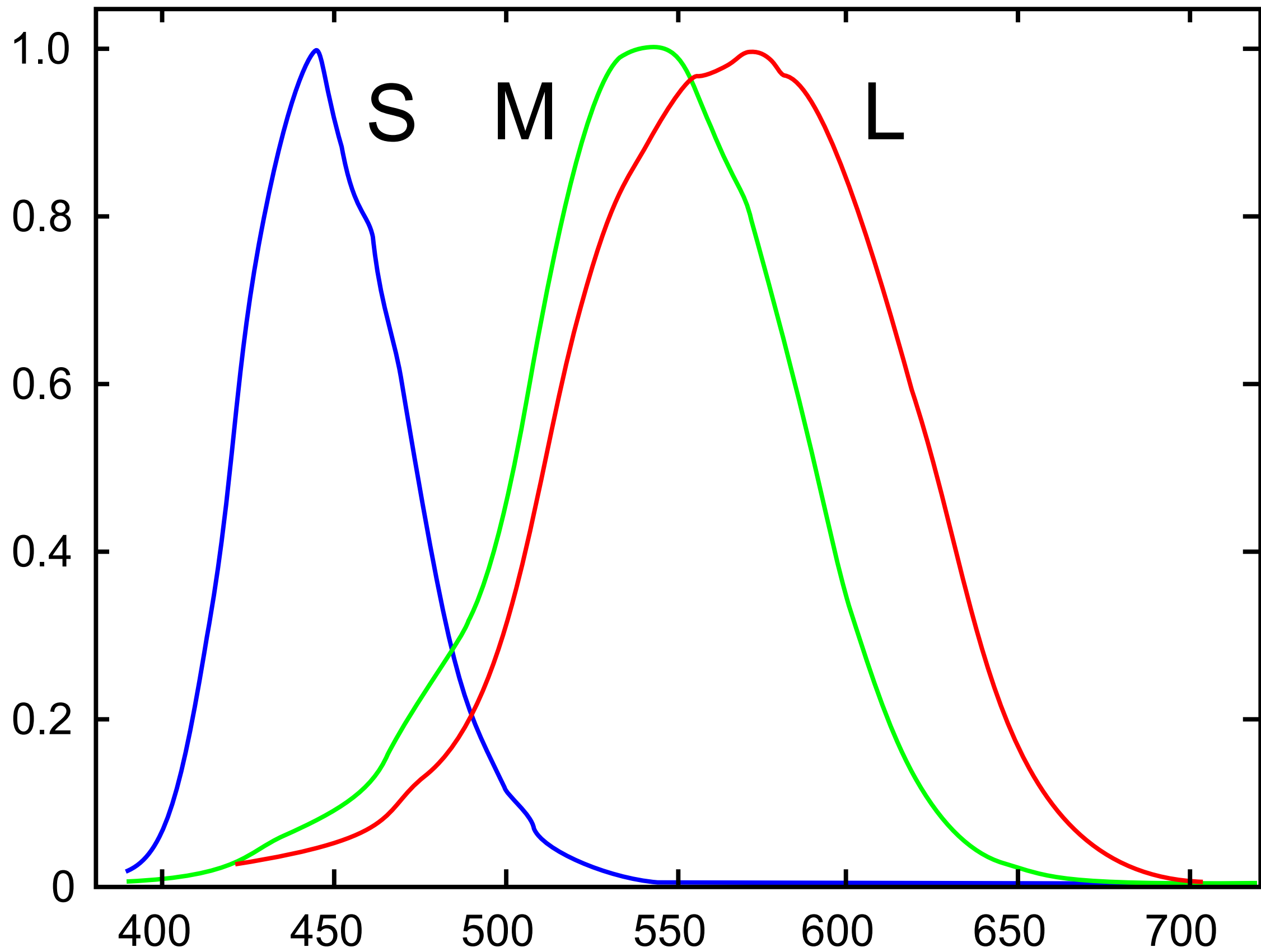


**Green** 550nm



**Blue** 450nm





**color reproduction**

**color perception**

**color profiles**

**pigments**

**structural colors**

the list goes on...

**(a little) color theory  
+ color temperature**

# **Color Theory**

3 Parameters:

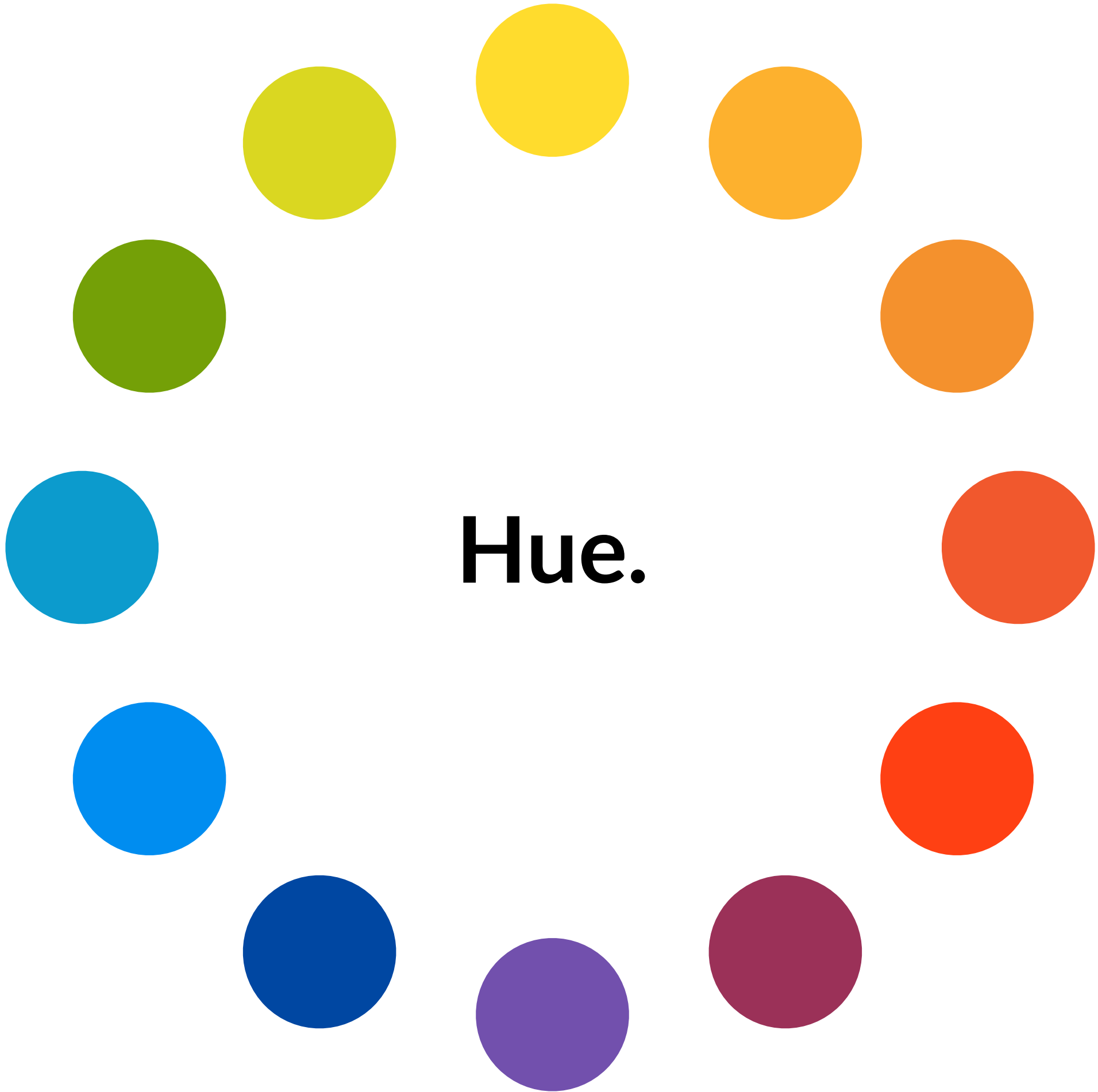
**Hue**

**Saturation**

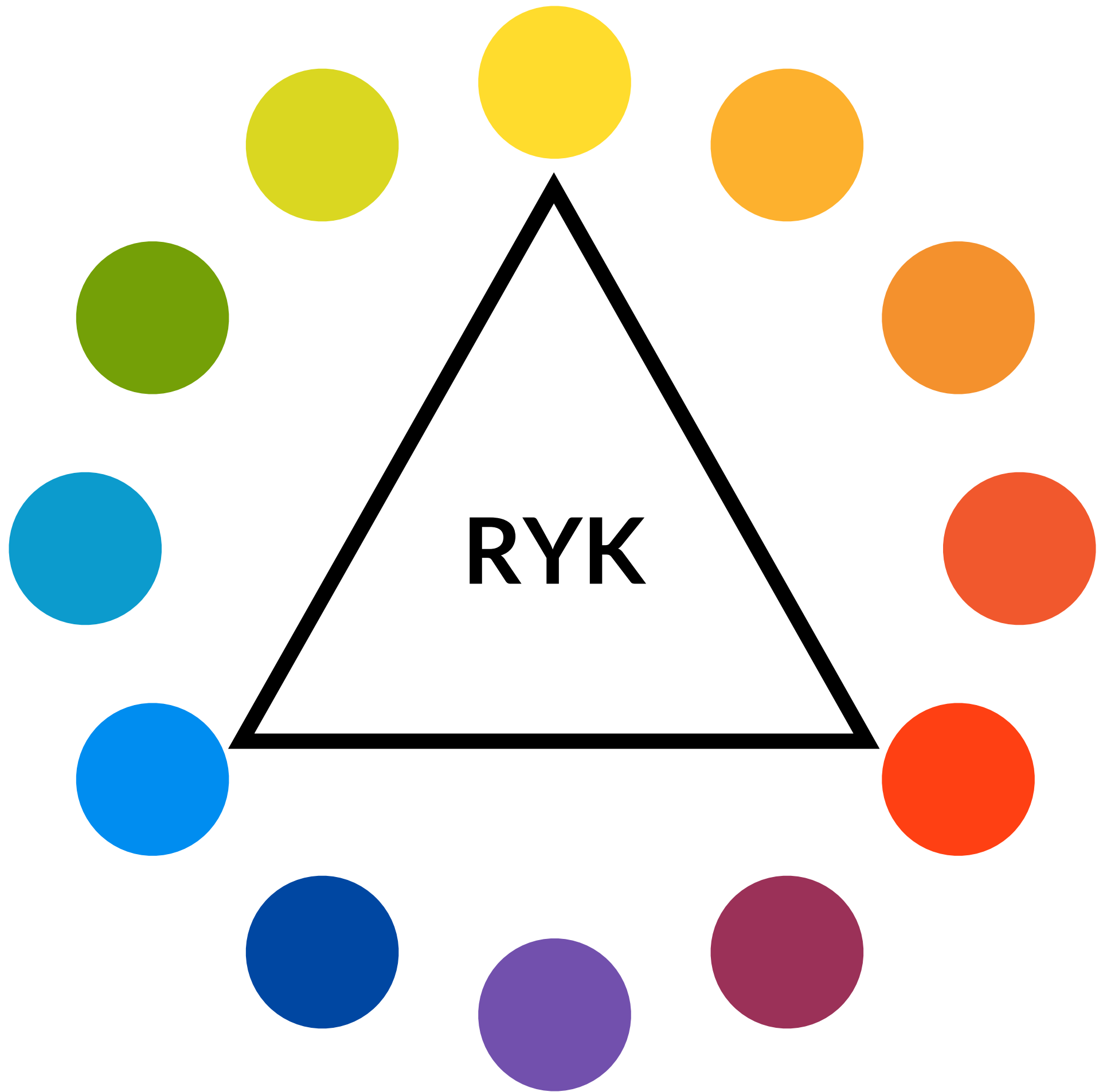
**Brightness**

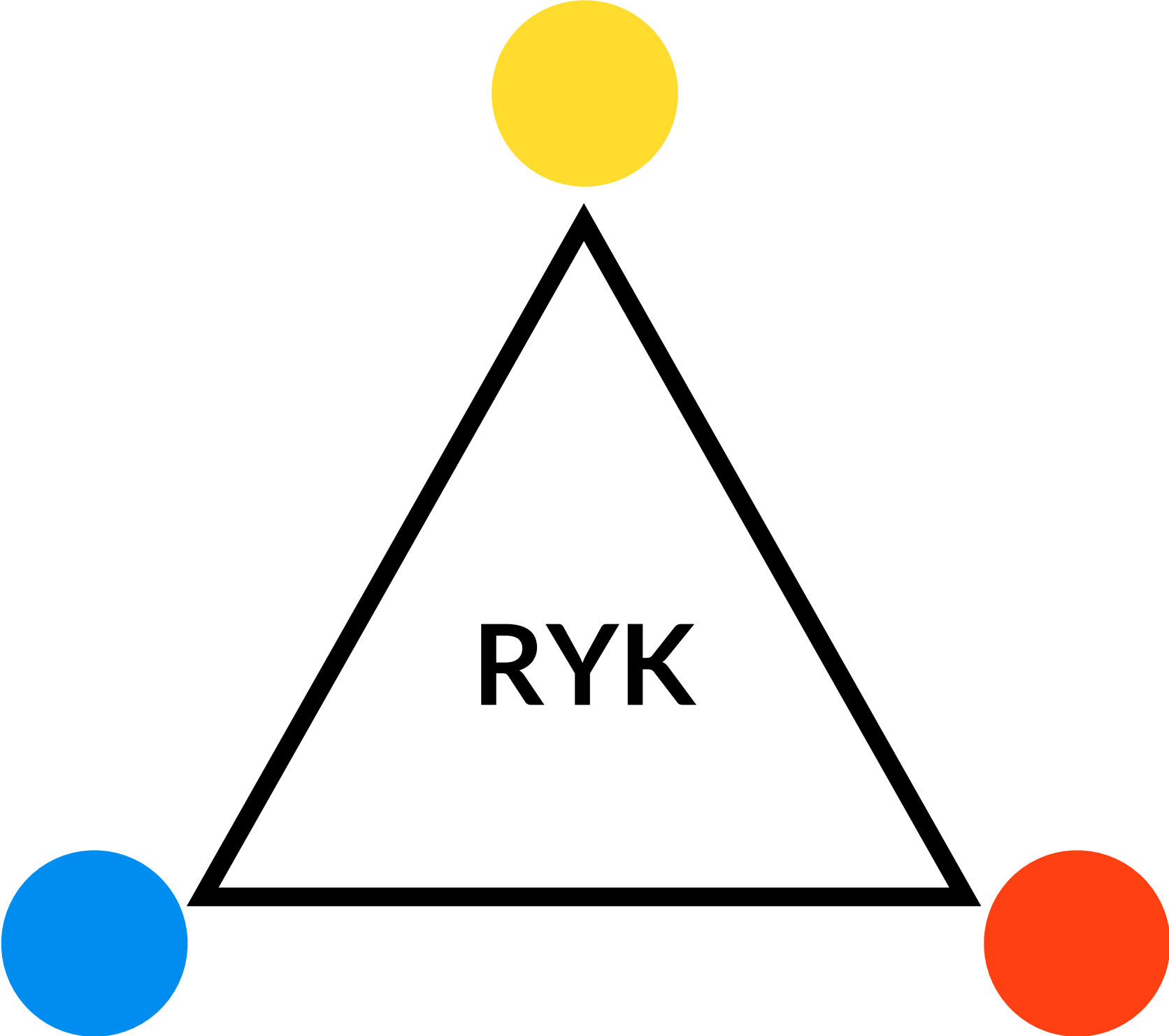


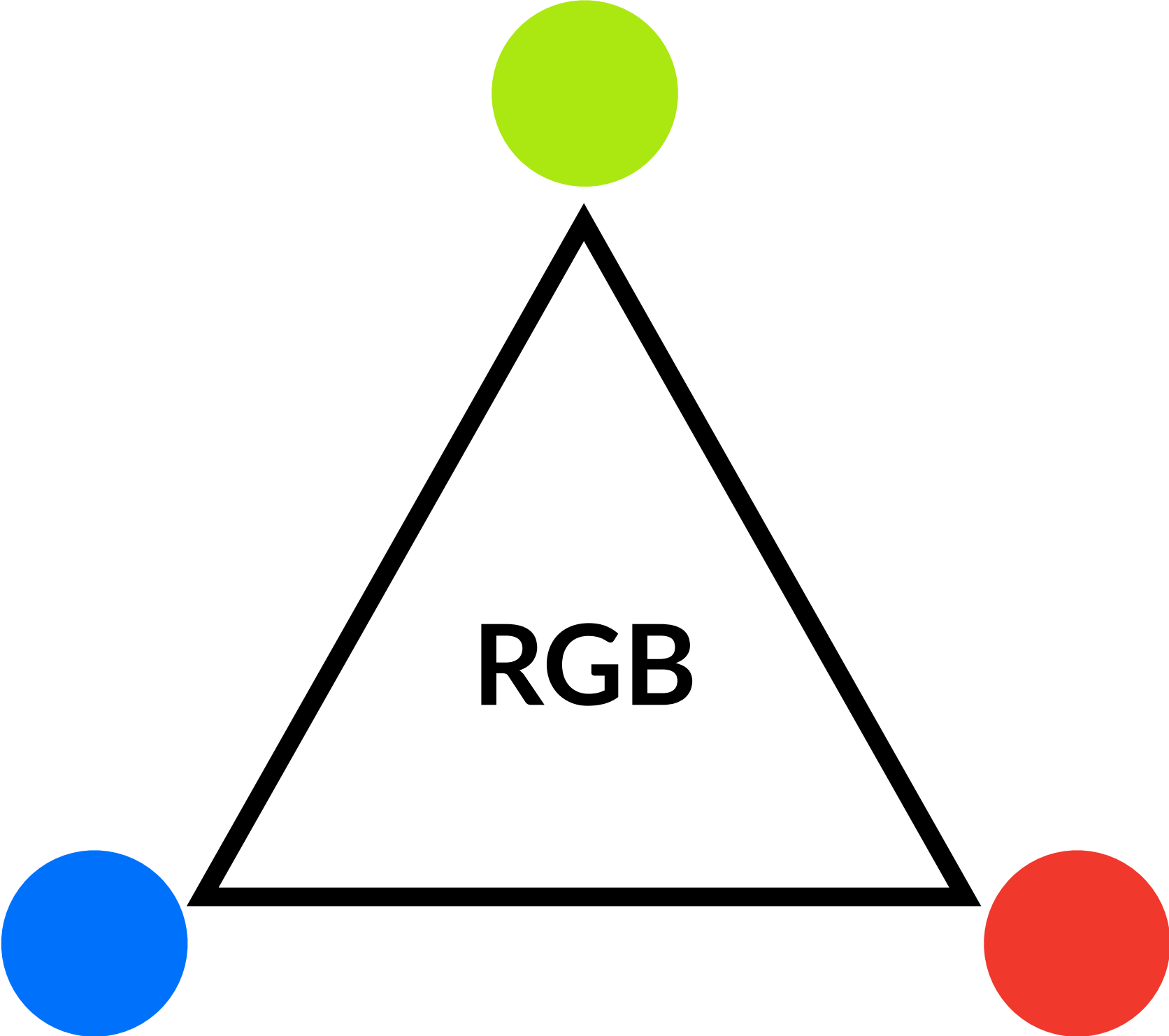
**Hue.**

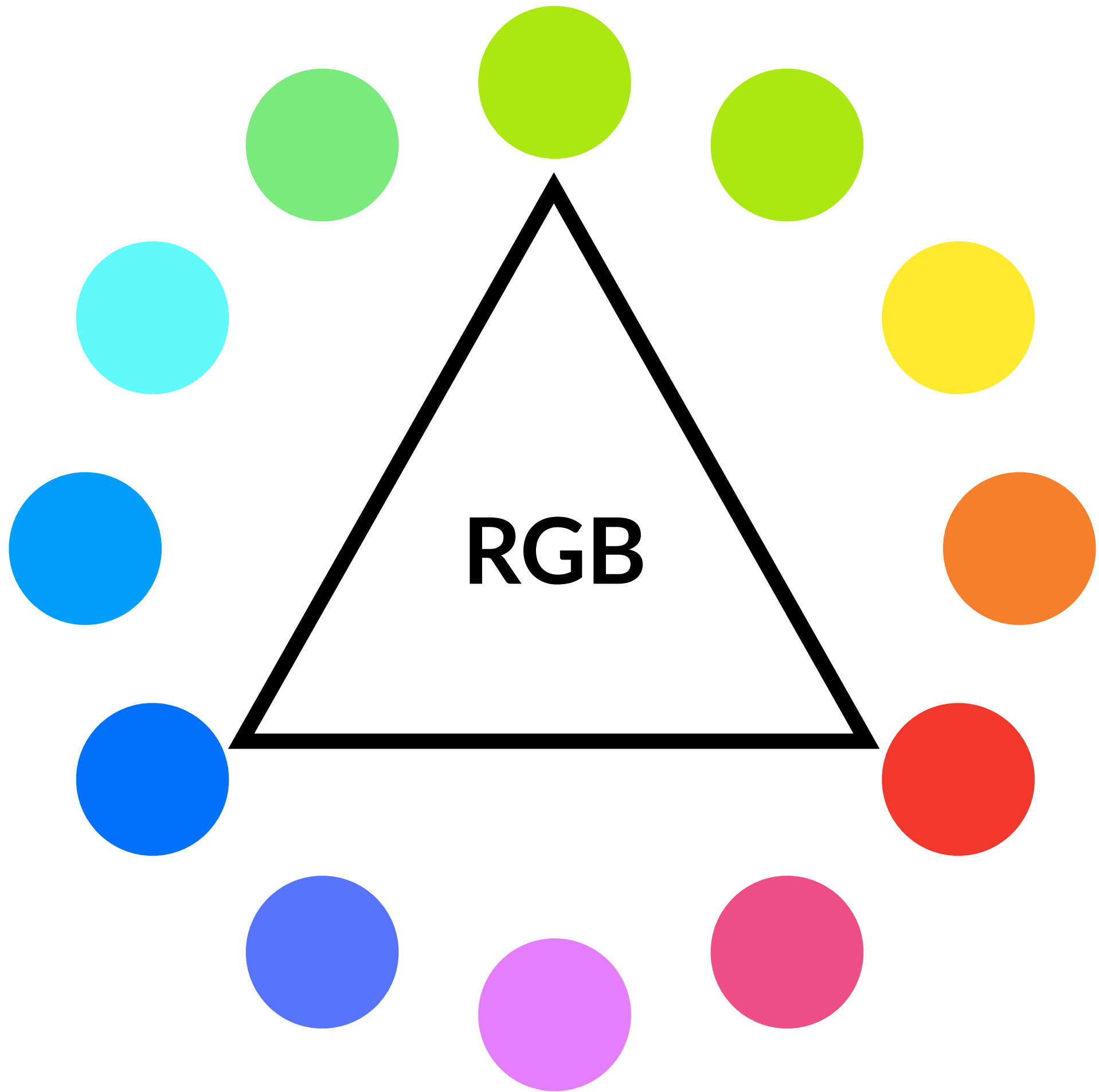






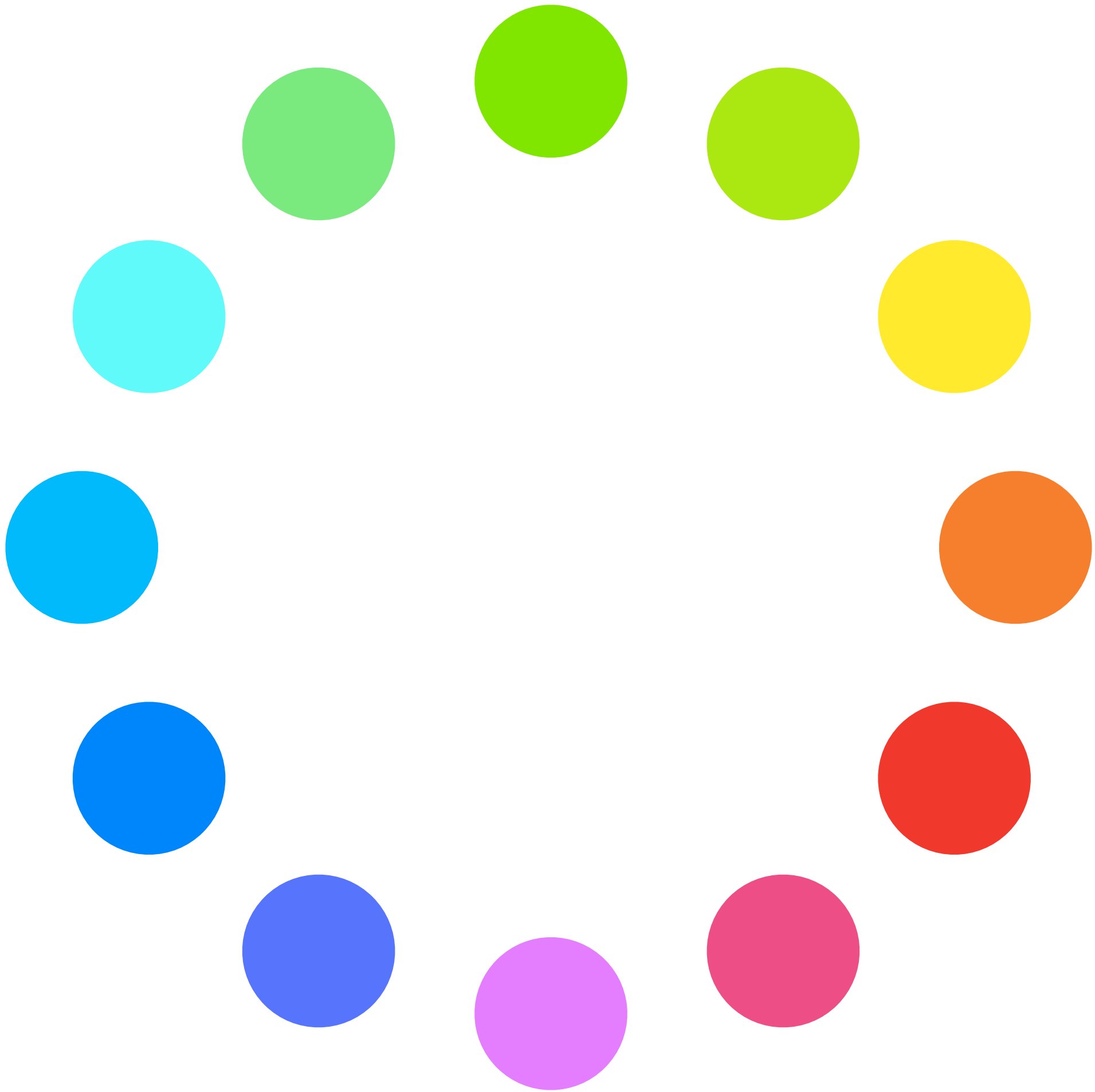


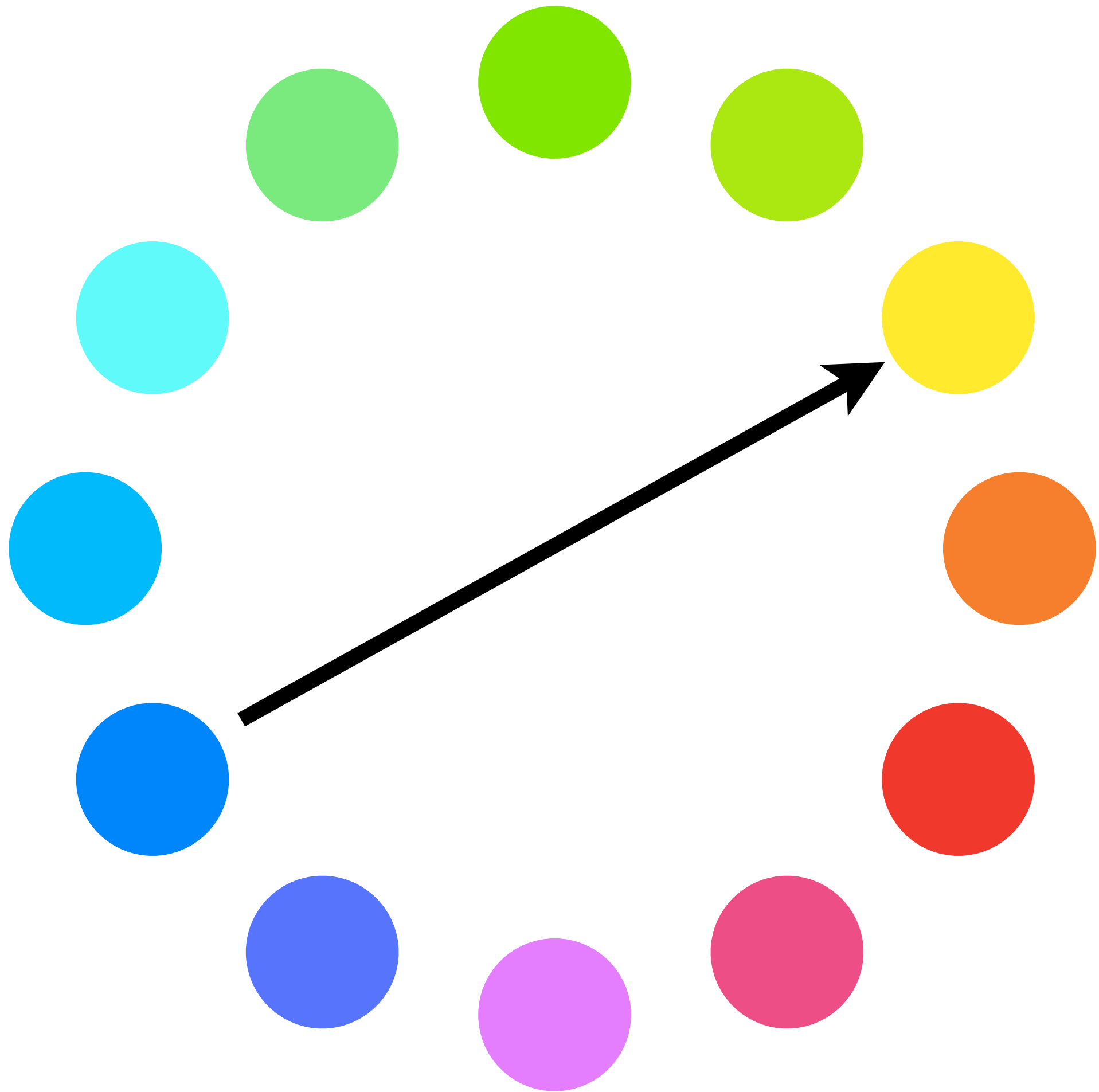


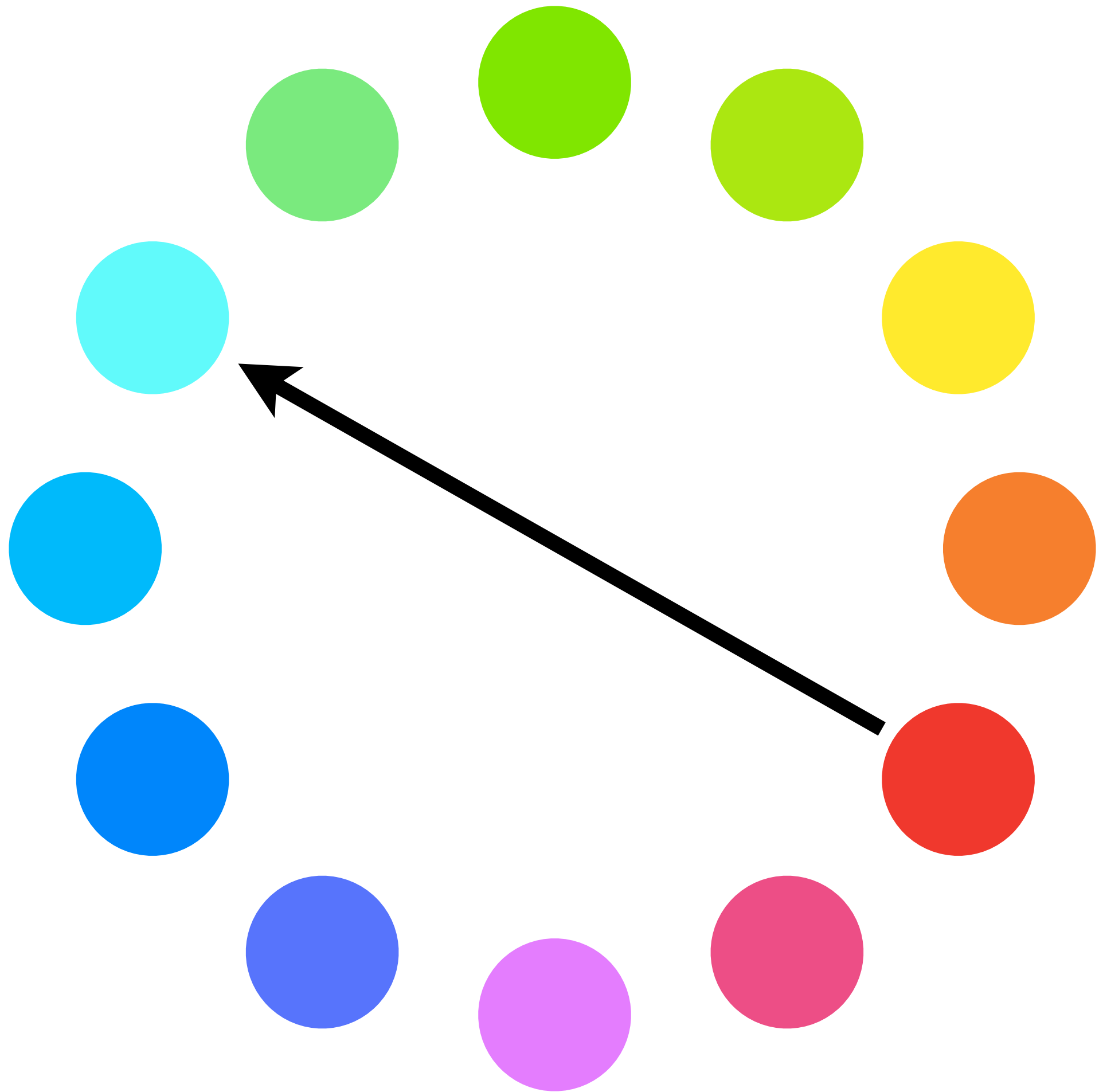


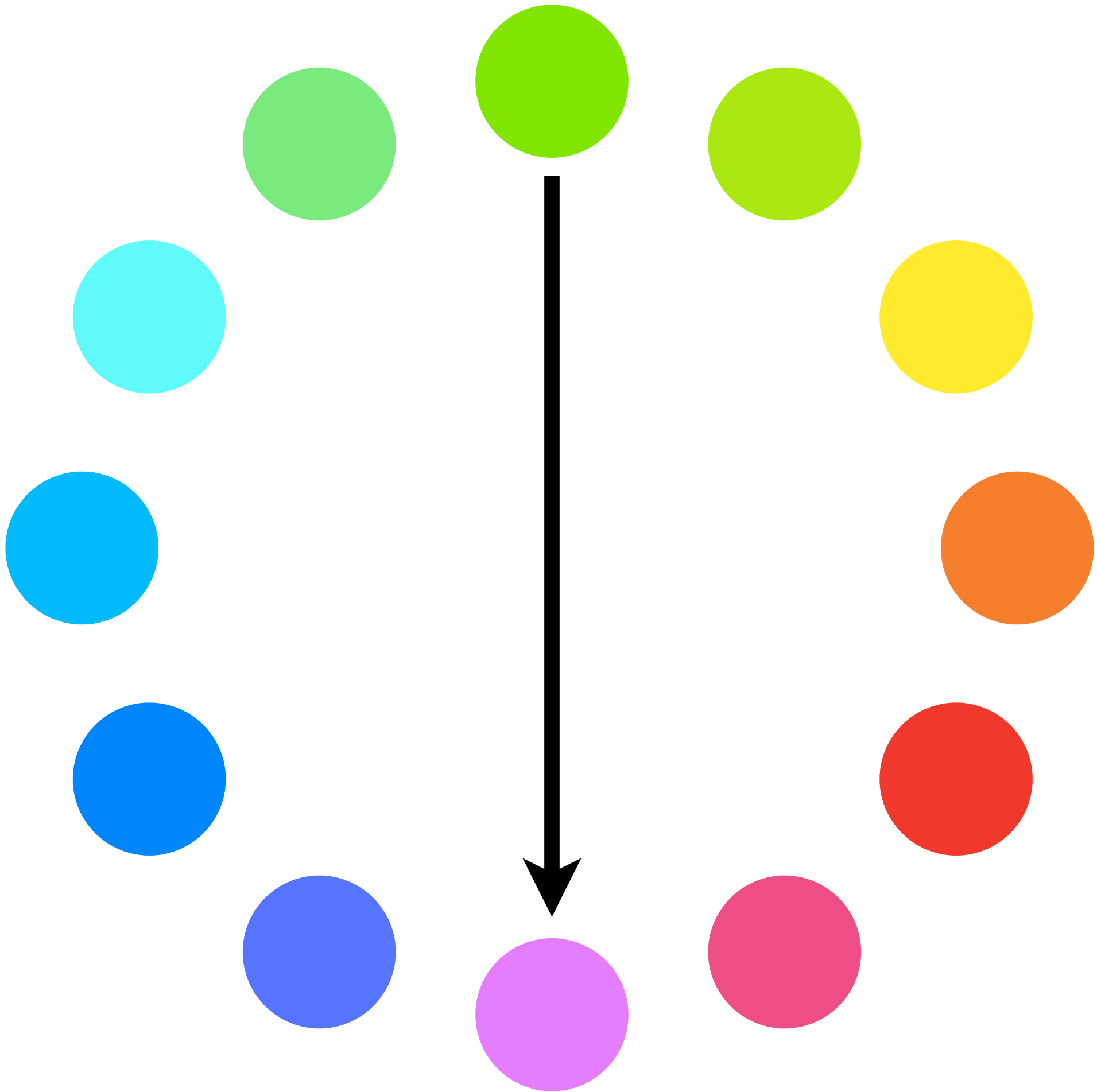




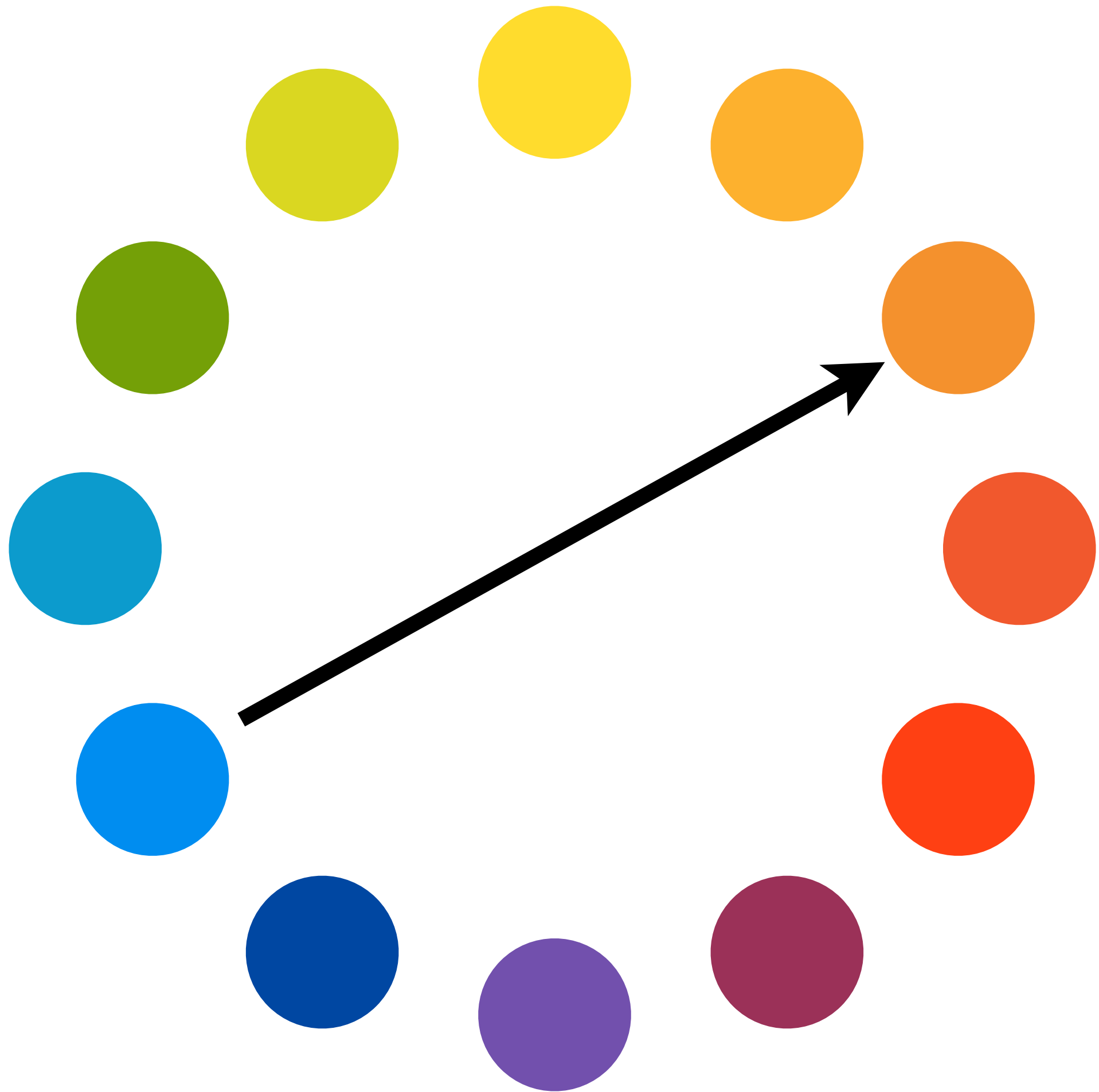


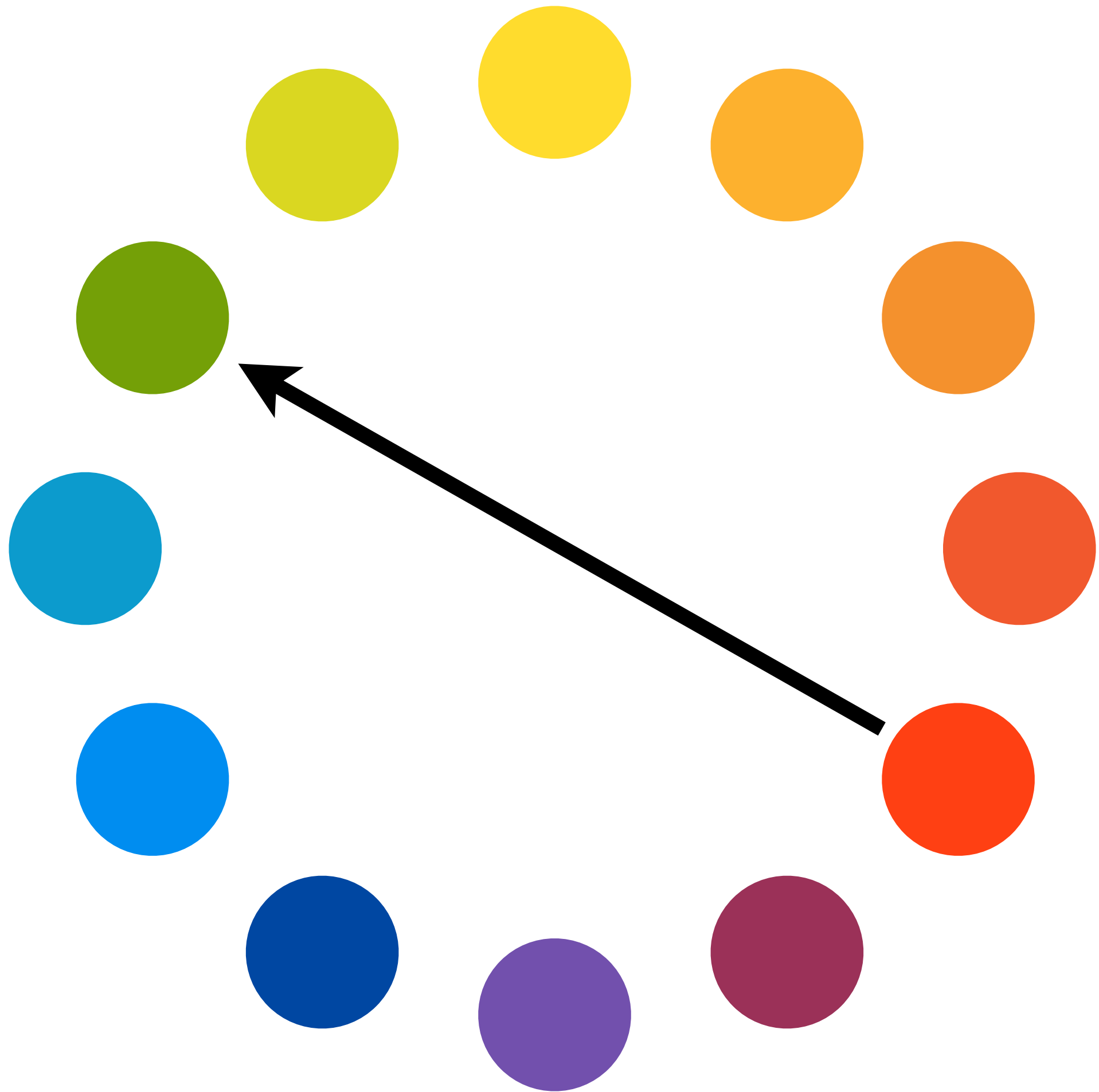


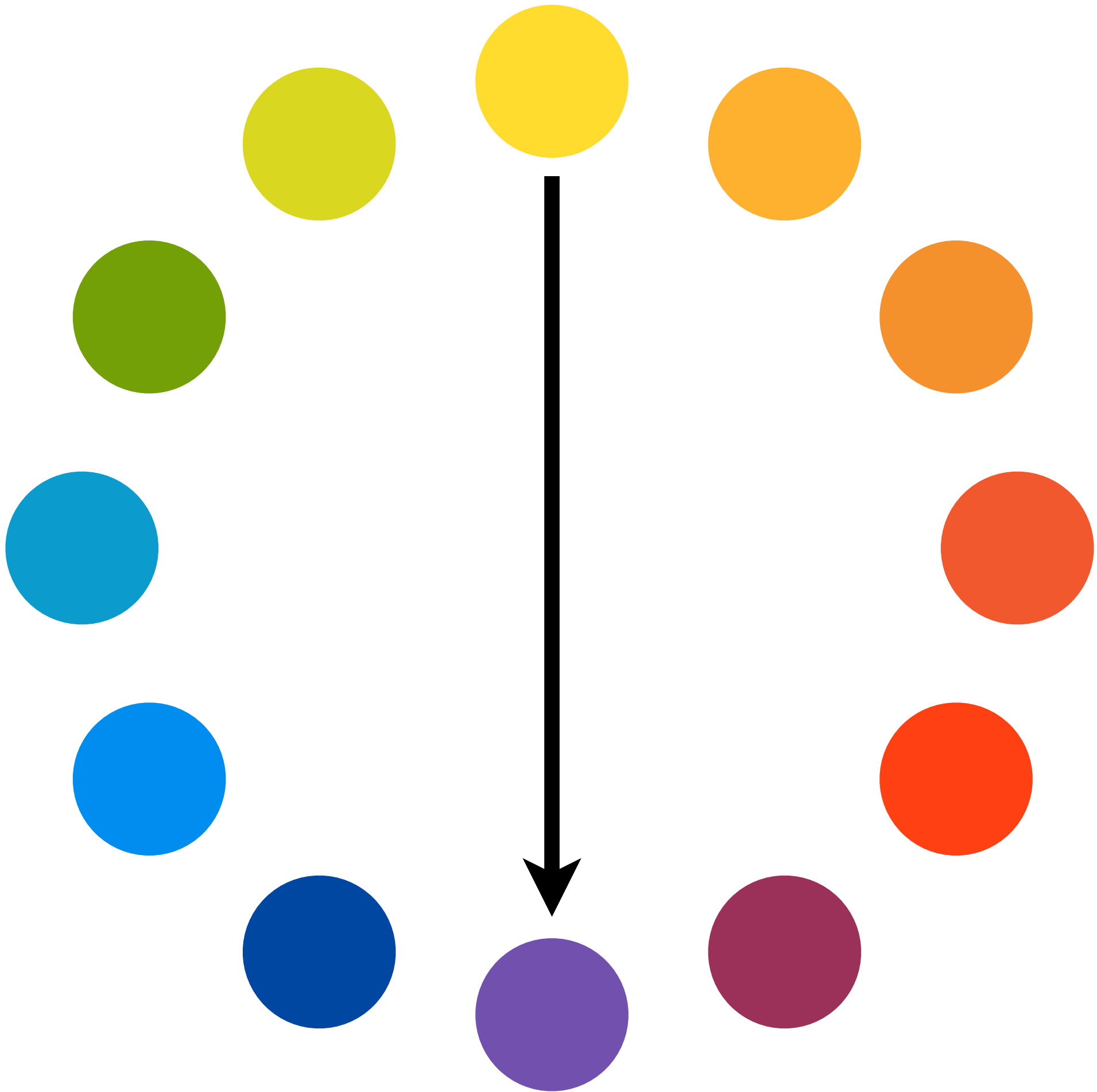








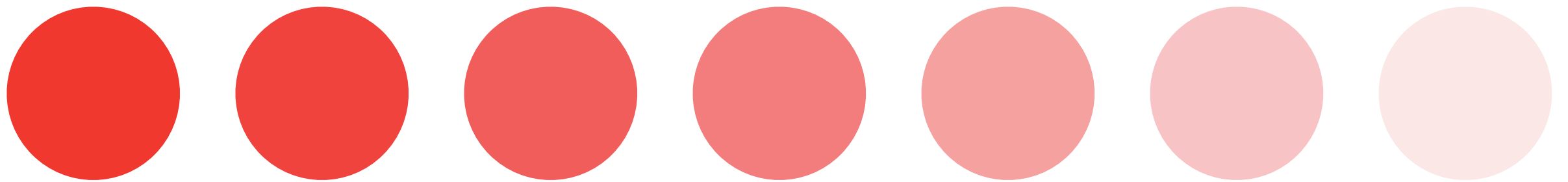






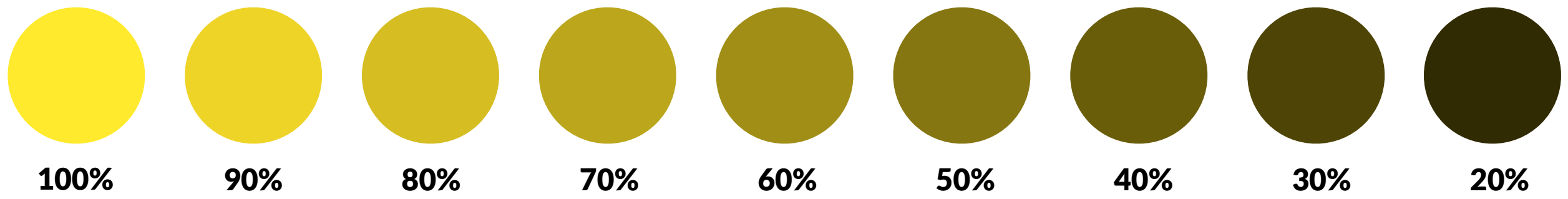
**Saturation.**

**Saturation.**

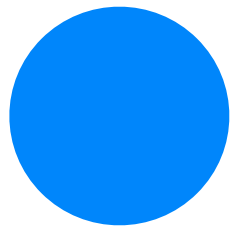


**Brightness.**

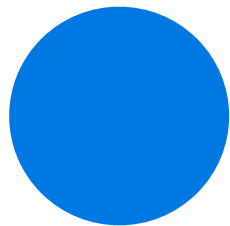
**yellow**



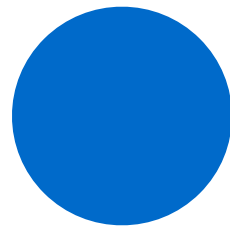
**blue**



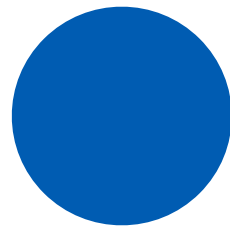
**100%**



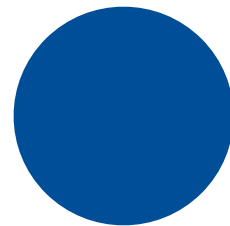
**90%**



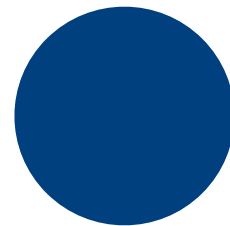
**80%**



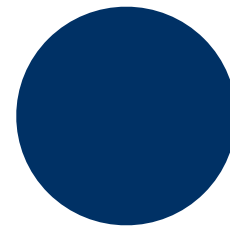
**70%**



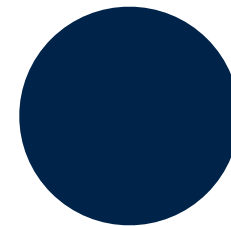
**60%**



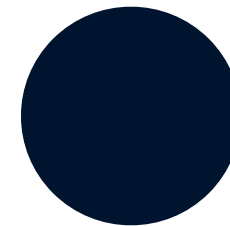
**50%**



**40%**

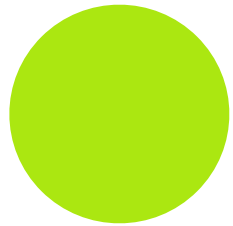


**30%**

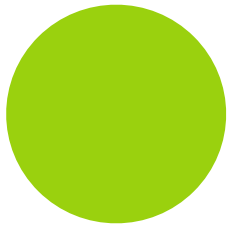


**20%**

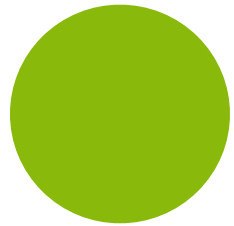
**green**



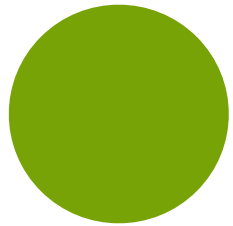
**100%**



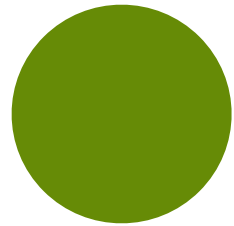
**90%**



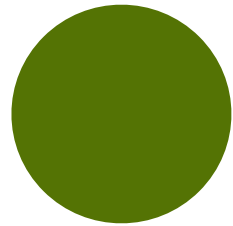
**80%**



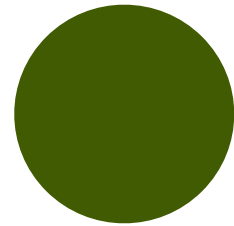
**70%**



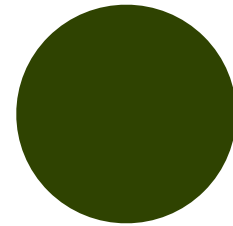
**60%**



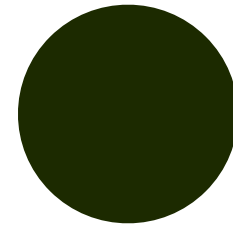
**50%**



**40%**



**30%**



**20%**

**Advancing and receding colors.**







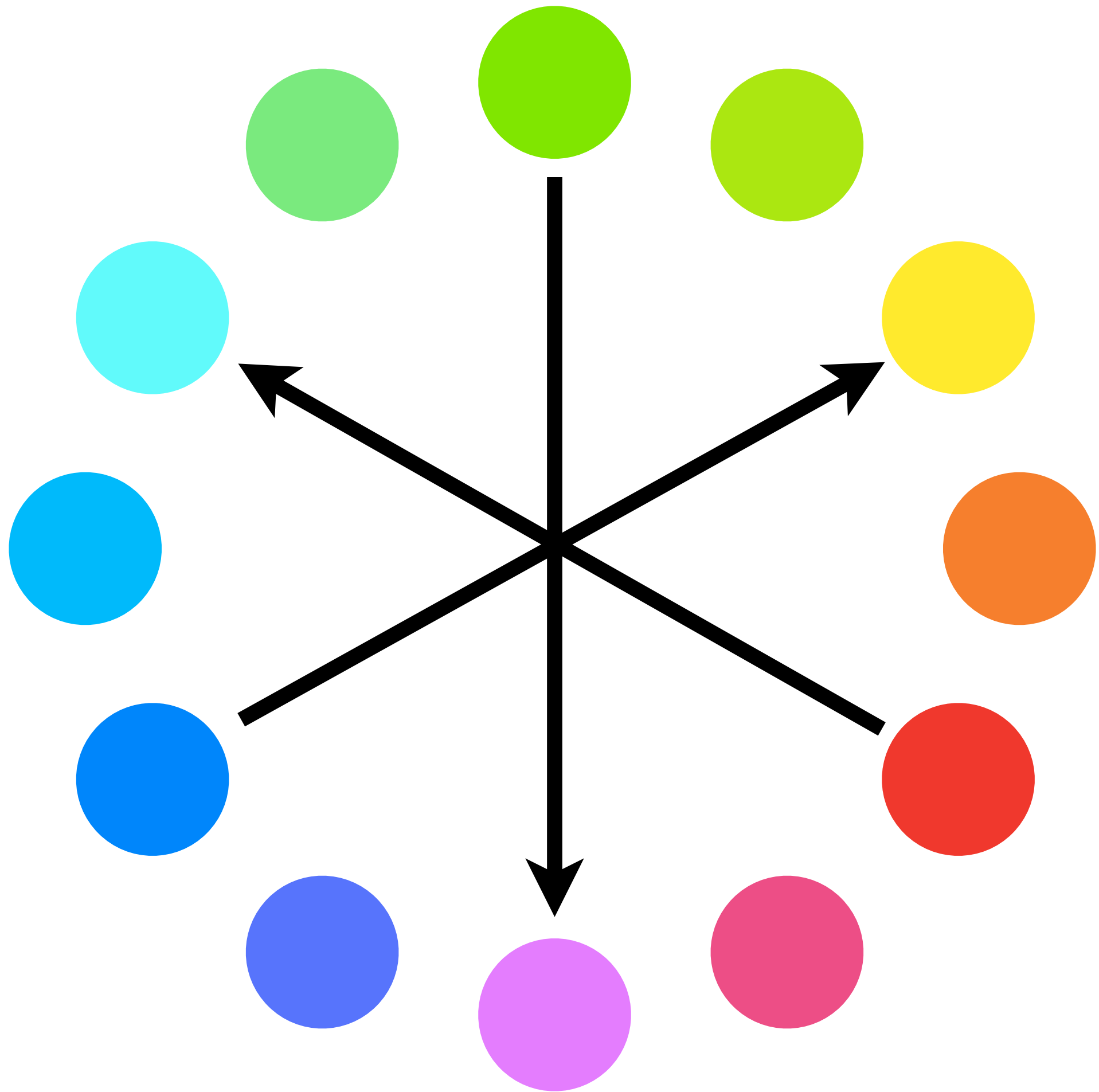


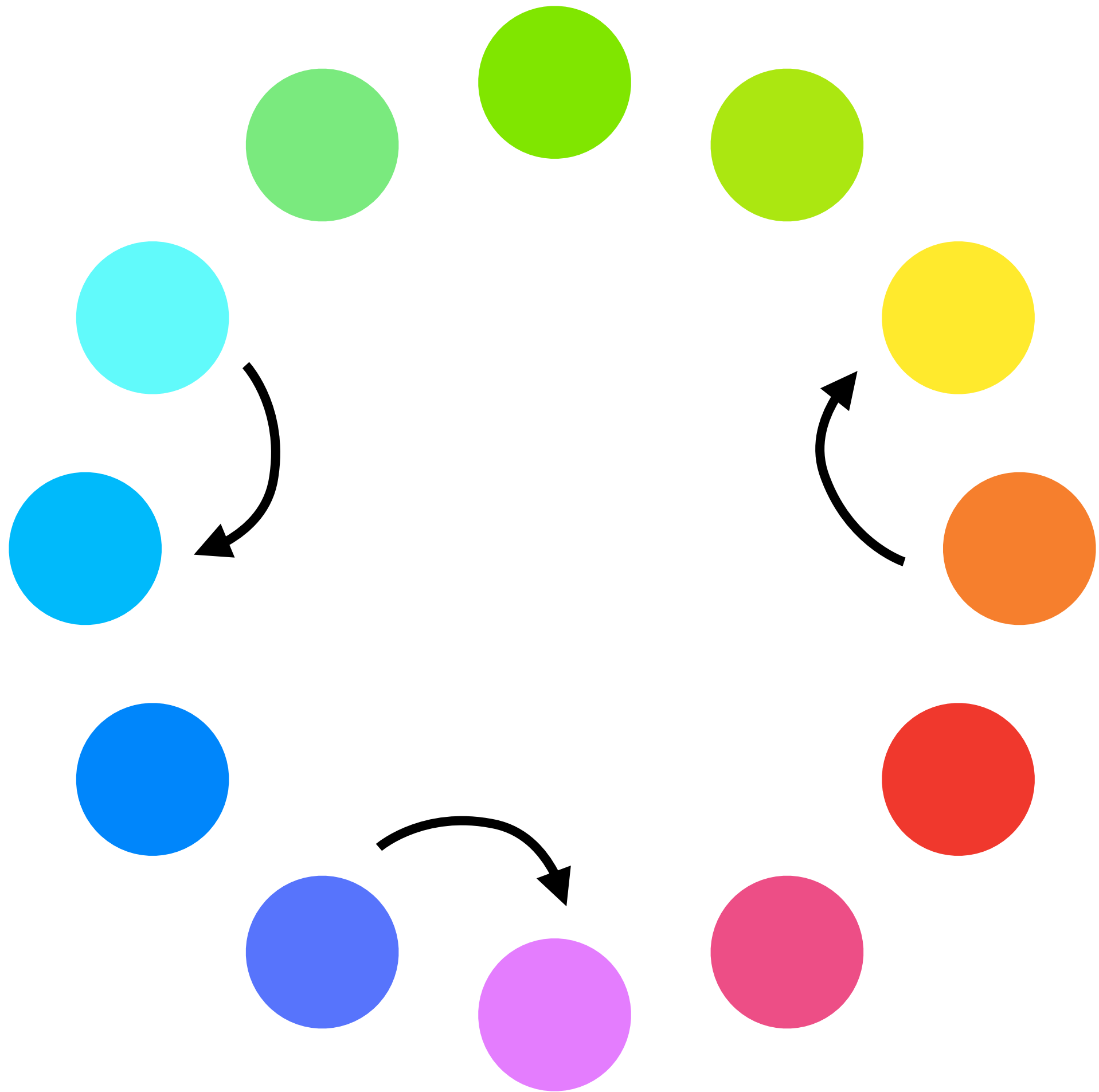






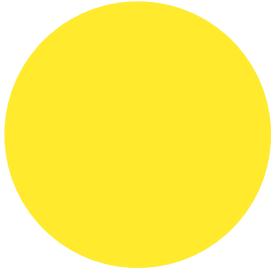
**Combining colors.**



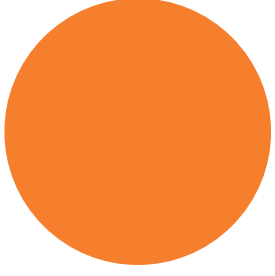




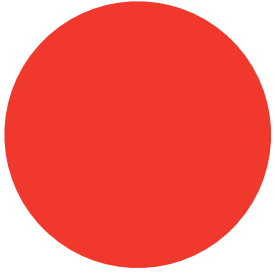
**“color intensity”**



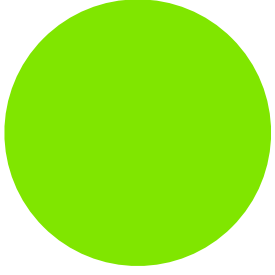
9



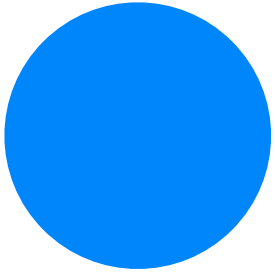
8



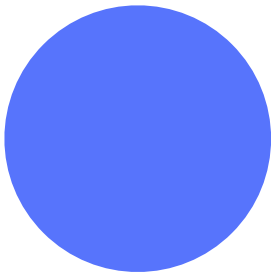
6



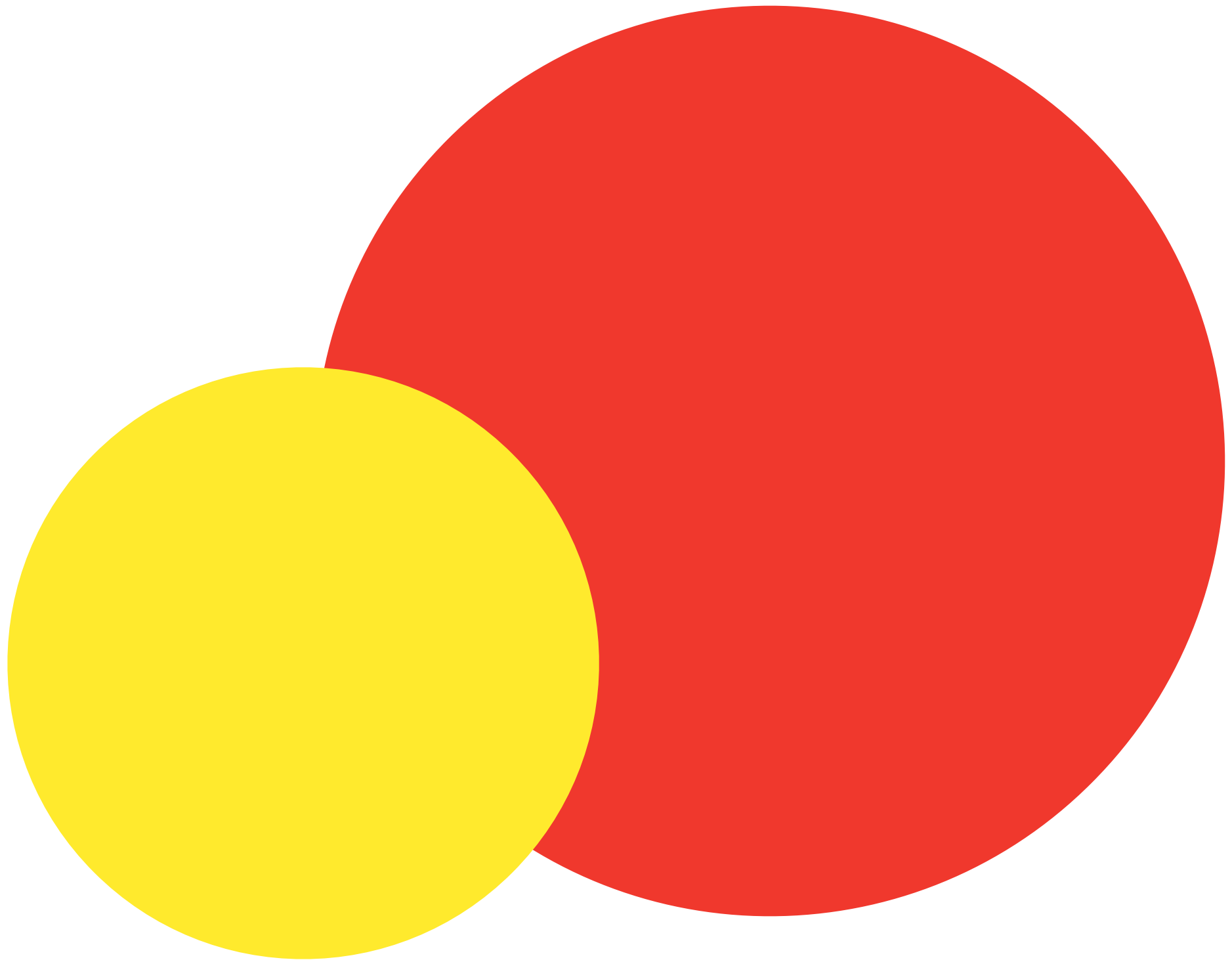
6



4



3















William Christenberry





Pete Turner



Pete Turner

thinking about color temperature...

**light sources**

# **indoor**

fluorescent light

incandescent light

candlelight

window light

# **outdoor**

sunlight

street lights

building lights

moonlight

fluorescent light

**natural light** (super complex)

clouds

haze

temperature

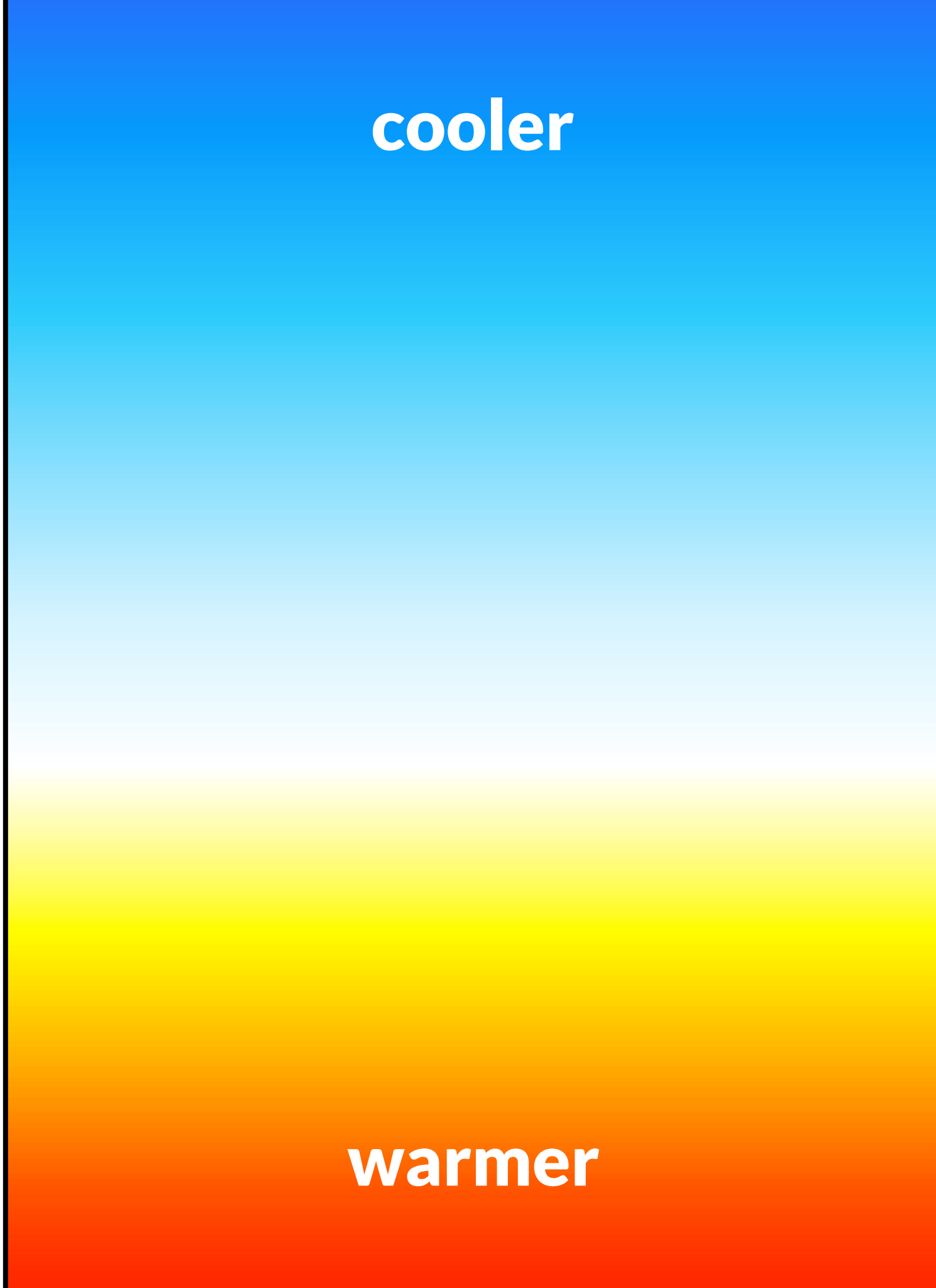
season

time of day

**and more...**

**Color Temperature (K)**

	<b>10 000 K</b>
Blue Sky	
	<b>9 000 K</b>
Partly Cloudy	
	<b>8 000 K</b>
	<b>7 000 K</b>
Overcast / Haze	
	<b>6 000 K</b>
Noon Daylight Direct Sun	
	<b>5 000 K</b>
	<b>4 000 K</b>
Late Sunrise Early Sunset	
	<b>3 000 K</b>
Early Sunrise Late Sunset	
	<b>2 000 K</b>
	<b>1 000 K</b>



cooler

warmer



**camera vs. eye**

**10 000 K**

**9 000 K**

**8 000 K**

**7 000 K**

**6 000 K**

**5 000 K**

**4 000 K**

**3 000 K**

**2 000 K**

**1 000 K**

**cooler**

**warmer**

**Tungsten**  
**(Incandescent)**



**Candlelight**

**10 000 K**

**9 000 K**

**8 000 K**

**7 000 K**

**6 000 K**

**5 000 K**

**4 000 K**

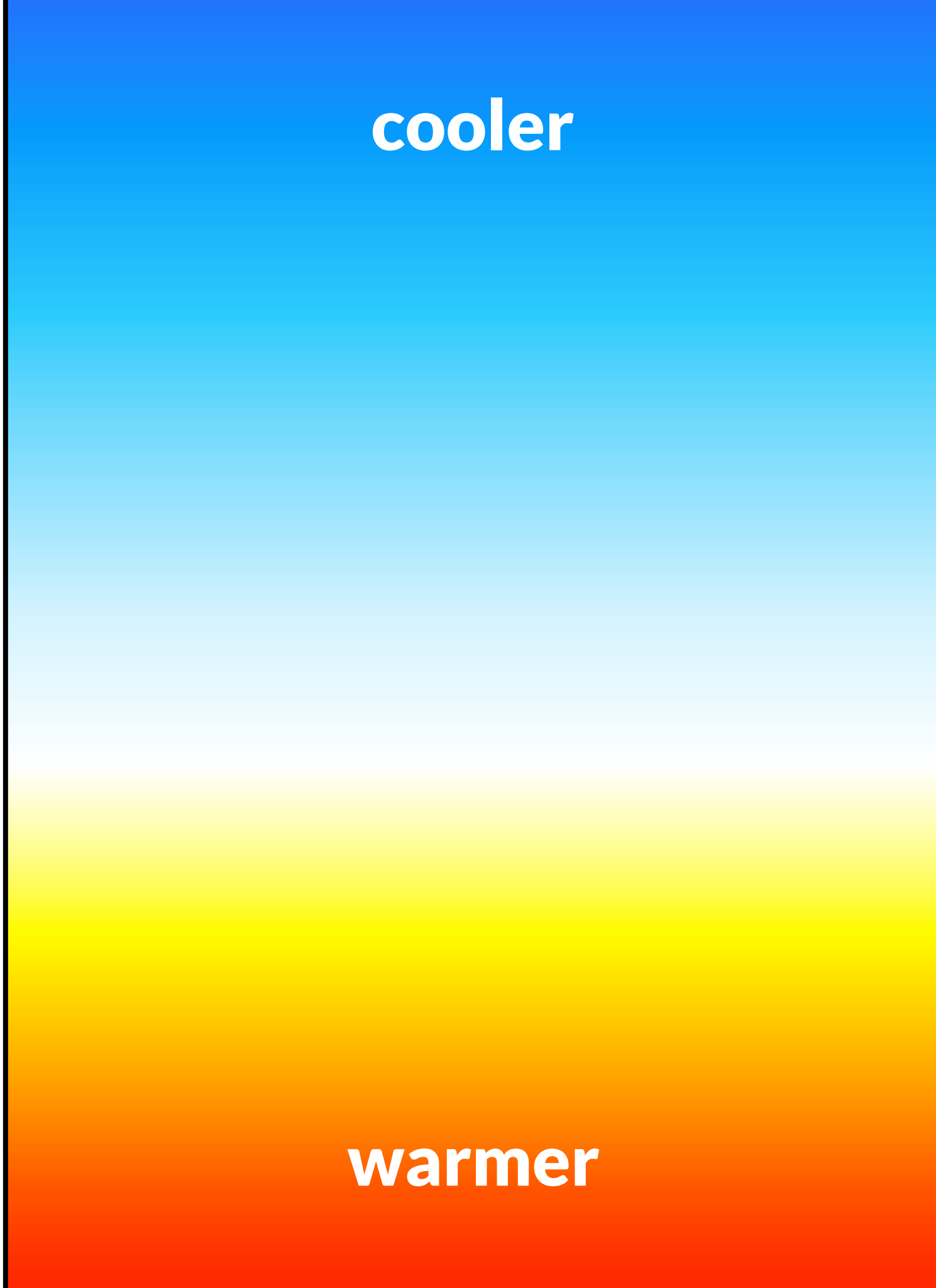
**3 000 K**

**2 000 K**

**1 000 K**

**cooler**

**warmer**



**10 000 K**

**9 000 K**

**8 000 K**

**7 000 K**

**6 000 K**

**5 000 K**

**4 000 K**

**3 000 K**

**2 000 K**

**1 000 K**

**cooler**

**warmer**

**Fluorescent**



**10 000 K**

**9 000 K**

**8 000 K**

**7 000 K**

**6 000 K**

**5 000 K**

**4 000 K**

**3 000 K**

**2 000 K**

**1 000 K**

**cooler**

**Sodium Lights**  
(street lamps)

**warmer**



what to do with multiple sources?

**let's change our white balance!**

**AWB**

AUTO

camera sets white balance



DAYLIGHT

camera adds warm tones



CLOUDY

camera adds warm tones



SHADE

camera adds warm tones



TUNGSTEN

camera adds cool tones



FLUORESCENT

camera adds warm (red) tones



FLASH

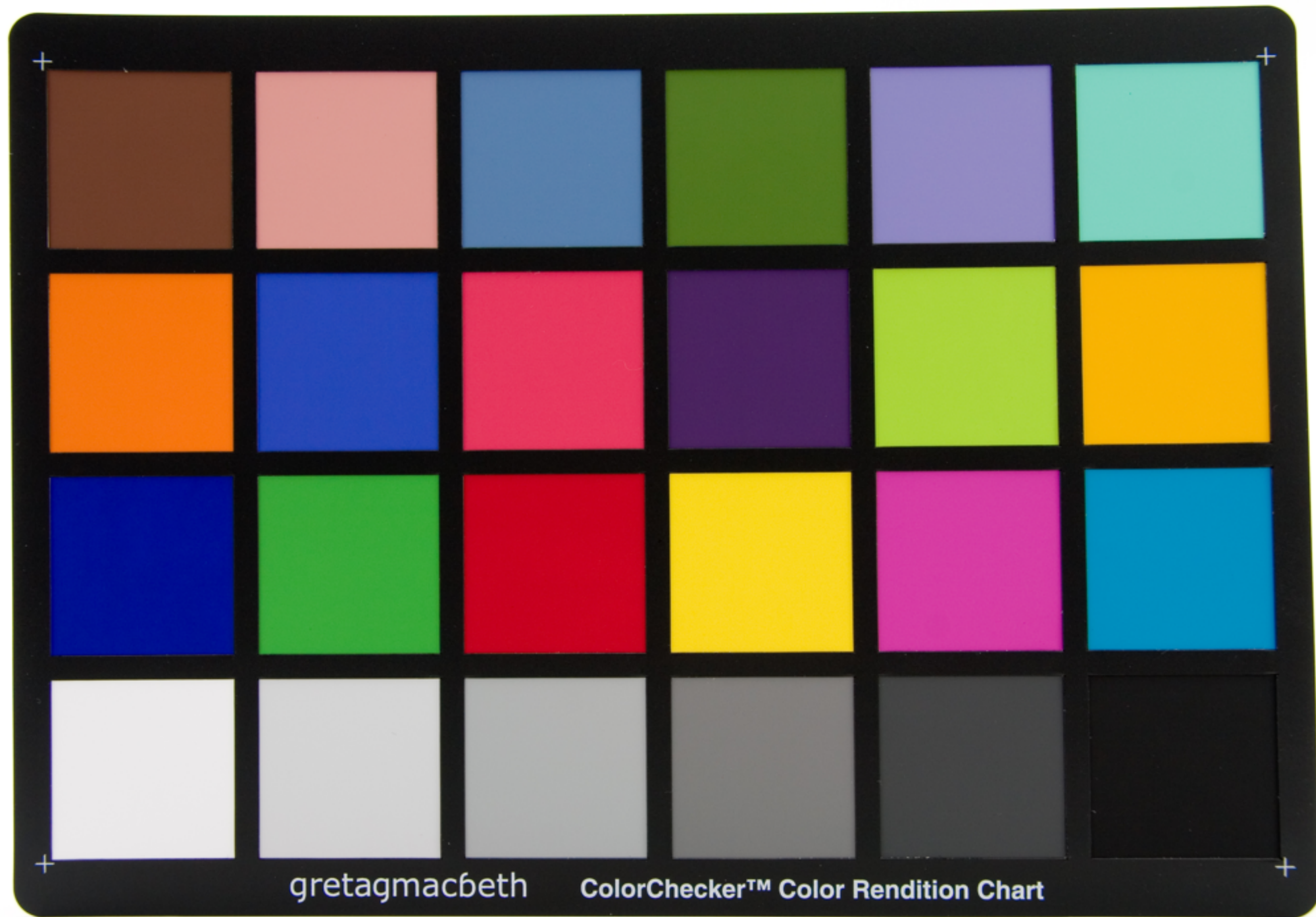
camera adds warm tones



CUSTOM

photographer sets white balance





gretagmabeth

ColorChecker™ Color Rendition Chart

# **Color and Gamut**

(a.k.a. reproducing color is hard)

