Color Theory and the Relationship of Transparency in Glass

Researched and Presented by Emily Clair Potter

Color Theory

- Color theory is the practical guidance of the visual effects that colors have in a specific combination
- Color theory's primary tool is the color wheel
- Groups of colors are represented on the wheel in primary, secondary and tertiary colors





Color Theory in Glass

- Glass color changes based on temperature and heating techniques. It can also be manipulated in a manner to change its hue and tint
- Glass is a unique material in the art world because it originally transparent before color application
- When applying color to glass, Colors can be applied over each other, but cannot be mixed

Project Goal

Develop a better Understanding of the relationship that transparency has to color theory in Glass

Hypothesis

Transparency does not infringe on the traditional guidelines of color theory



Parameters

- Selecting primary and Secondary colors, I chose a transparent and opaque counterpart for each color
- I arranged different colors next to each other to see if the effects of the colors visually differ between opaques and transparent

	Color	Name	Number
Primary	Red	Fire Red	R-147
		Cherry Red	R-141
	Yellow	Corn Yellow	R-077
		Brilliant Gold	R-212
	Blue	Lapis Blue	R-091
		Mountain Blue	R-420
Secondary	Orange	Mandarine	R-119
		Orange	R-140
	Purple	Opal Violet	R-088
		Amethyst	R-013
	Green	Watermelon	R-700
		Green Light	R-257

Color Tests and Investigation

- Complimentary
- Warm and cool colors

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Warm	Cool		
Red	Blue		Red
Orange	Green		Blue
Yellow	Purple		Yellov

Warm	Cool	Complimentary		
Red	Blue	Red	Green	
Orange	Green	Blue	Orange	
Yellow	Purple	Yellow	Purple	



Transparent Cherry Red (R-141) test piece

Observation Categories

- Saturation
- Tint
- Hue





Findings

- In comparison, complimentary colors hold the same guidelines between opaque and transparent colors
- The compliment of each color is the same whether they are transparent or opaque
- The same holds true for the categories or warm and cold colors.

Observations

- Transparent colors interact with light optics to make them seem softer even if the transparent color is darker.
- The saturation of the color is determined by how much glass is used
- Transparent colors have a wider range of tint than opaques
- For a more saturated color application, the color effects the amount of color needed, not if the color is transparent vs opaque
- The hue of opaque colors is more easily distorted
- Opaque colors are more vibrant





Hurdles

- Limited color options (not being able to obtain the same hues of both transparent and opaque colors)
- Chemical make-up of glass colors

Conclusion

- Transparency does not challenge color theory
- Each chemically different color (regardless of opacity) has unique qualities that effect the optics of glass.
- Transparent and opaque colors can be combined in a plethora of ways to achieve more visually optic scenarios than other art mediums.

