Color Theory and the Relationship of Transparency Written Transcript

Researched and Presented by Emily Clair Potter

Color theory is the practical guidance of the visual effects that colors have in a specific combination. The primary tool to determine the different combinations in color theory is the color wheel. Groups of colors are represented on the wheel in conjunction with color theory guidelines. For this research project I will be using only primary and secondary colors. As a glass blower, I have discovered the phenomenon of working with such a unique material. The glass color changes based on temperature and heating techniques. It can also be transparent and manipulated in a manner to change its hue and tint. All of these factors prove challenges when segregating colors for research purposes. Glass is a unique material in the art world because it has the ability to be transparent. Color theory relies on hue and tint and both of these change as glass material is acquired in the working process. When Coloring glass, Colors can be applied over each other, but cannot be mixed like paint. The primary goal of this project is to develop a better Understanding of the relationship that transparency has to color theory in Glass. My hypothesis is that transparency does not infringe on the traditional guidelines of color theory. I hypothesize this because after my years of experience with the material, while transparent and opaque colors have significant differences in optics, they still fall under the traditional color roles. As mentioned before, I have selected primary and secondary colors as the focus of this experiment. I began by choosing 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. I will be testing the colors in two categories: complimentary and warm and cool colors. I will also be collecting observations based on saturation, hue, and tint in the colors. Because glass colors are greatly limited in comparison to other materials like paint or ceramic glaze, the saturation of one color often impact the color it becomes. My findings conclude that the differences as far as color theory is concerned for complimentary colors when compared between opaque and transparent is the same. As far as the categorization of the colors into warm and cool groups, the findings are the same. Transparency does not affect the color's ability to be warm or cool. While the conclusions of findings between complimentary color combinations confirmed that there was no

significant difference between opaque colors and their transparent counterparts. There is evidence that supports that the transparent color combinations seem softer because of their incorporation of light optics. Among other observations, the saturation of the color is determined by how much glass is used. This gives transparent colors a wider color range than opaque colors. Transparent colors also have a wider range of tint than opaques. Opaque colors (if blown out too much in the glassblowing process), no longer resemble their colors. In comparison, transparent colors do not distort the color qualities of the glass color, it only effects the tint, thus having a wider working range per chunk of bar (glass bar is a unit that the color comes in). For a more saturated color application, the color effects the amount of color needed, not if the color is transparent versus opaque. The color of glass is determined by its chemical makeup. The chemical makeup of a transparent orange color compared to an opaque orange counterpart is different. Because of the chemical differences, all color variations have different properties that are affected in the glassmaking process. The hue of opaque colors is more easily distorted than that of a transparent color. Opaque colors can blow out and becoming hazy if not enough of the color bar is used for the size of the piece someone is making. Compared to a cubic inch of bar color. Transparent colors maintain better integrity of the intended color than opaques do because they become hazy. Opaque colors have more vibrant color range options than their transparent counterparts. Because opaque colors disrupt light from passing through, their color range seems more vibrant to the eye. Transparent colors allow light to pass through, thus interacting with the light to give them softer optics. There were a few hurdles in the conduction of this experiment. The first was that there are a limited number of glass color produces with an equally limited selection of offered colors. Because even the same color made by different companies (i.e. brilliant gold) have different chemical makeups, to keep the experiment consistent, I used colors all from the same producer, Reichenbach. There is a limited selection of colors form each producer. (a few different reds, a few different blues, etc.). Also, some colors are harder to make than others, giving them more limited options on the color spectrum. Red colors are all determined by how hot they get while being made; this means that the range of color is affected by the heat the color experiences leaving a limited range of reds. Because every color selected to test was not the exact same as the opaque and

transparent counterparts, the resulted are based on preliminary slightly different shades of colors. Because some glass colors are made of different chemicals and metals, they can alter their colors in the making process. Many glass colors are noted as reducing or striking. Reducing and striking colors are affected by the amount of oxygen the flame is that is used to heat the material. Different striking and reducing colors have different ratios of gas to oxygen needed to change the color. The reheating chamber (in the glass department that the BGSU provides) has a fixed ratio of gas to air. This ratio has cause colors in the experiment (like the brilliant gold) to begin to change when manipulated in the process of the experiment. In conclusion, this experiment proves that the color effects of glass do not challenge color theory in regard to opacity. Glass color does, however, have different qualities that effect the color in the making process. These unique properties change the final color of the glass from the color is begins as color bar. Transparent and opaque colors can be combined in a plethora of ways that bridge the light optics in the different colors to create a truly unique visual experience compared to those of other mediums.