Color and Its Effect on Us

by Sarah Fischer ’14

The national flags of the world and the subtlest hints of a magazine advertisement are works of color to manipulate our minds. Color, as the artists of the Early Gothic used it, is a simple expression of symbolism; or, as the Byzantine Empire used it, a balance in an artistic piece. Johannes Itten, known as one of the greatest teachers of color theory in modern times, describes color as a sort of music to life, the very thing exciting a dull form (Itten 8-9). Most of us know how much music can affect us. Color, without our knowing, has the same effect. It is more subtle, but just as profound. How do graphic designers working in advertising, work to manipulate just how we feel about color?

In hopes of shedding light on this, first let me explain basic color theory, harmony and how our brains process color. Artists like Itten have developed rules for color known as color theory that demonstrates an inherent harmony. The color wheel represents this as the center of color theory and the basic reference for artists. It shows relationships between colors in a fundamental way. The primary colors red, yellow and blue are the stable of the wheel, forming an equilateral triangle on the edges. The secondary colors, combinations of the primaries, such as orange, green and violet, also form this triangle. Each is flanked by tertiary colors, secondary colors combined with primaries. Every combination results in twelve wedges in this circle.

Colors opposite each other on the wheel are complementary opposites, forming gray when mixed. Artists use these colors to get a rousing and shocking effect when used side by side. The only thing left out is black and white, which form all other varieties to the basic twelve colors. The colors on the wheel are pure tints of color, with neither black nor white added. Saturation is related to this. The more saturated it is, the more pure it is. Anyone who has fiddled

with the settings in Photoshop knows what the saturation filter does to an image. Slide it up high to get pure tints of color, low to get very little color at all.

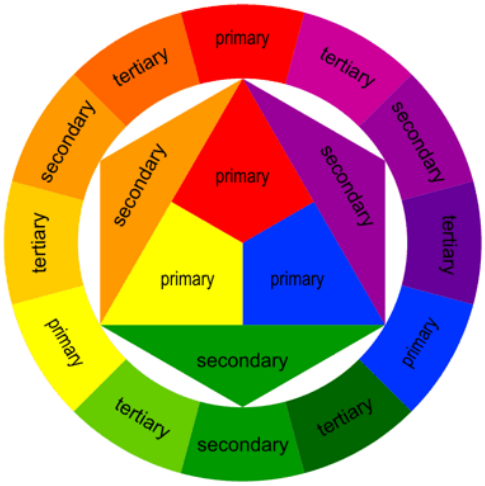

Fig. 1 **MacTaggart, John *The Color Factory.com*** Web. *Accessed 12/2010*

Color harmony is often based on the colors found together in nature. Analogous colors are adjacent to one another on the color wheel. They create harmony by having similar properties warm colors, those related to reds, are bright and stimulating. Cool colors, those related to blue and green, together are calming. These are different harmonies that together are very similar, rather than opposed, but are still highly effective together. Often, in nature, we see harmonious colors such as lighter greens with darker greens, or complementary colors, between flowers and the surrounding vegetation which helps them stand out to insects (Itten 45) (Color matters, Web).

We would be oblivious to these harmonies altogether if it were not for our ability to perceive color. Every eye of the animal kingdom has light sensitive cells within the eye known as rods, which can detect varying shades of black and white, an adaptation for night vision. A great deal fewer animals possess cones, which capture the wavelengths of color that reflect from

everything, but functions best in high light settings. Primates are unique among mammals in that they have all three types of cones: red, green and blue. Most mammals only have two, creating a more limiting range of visible wavelengths. Although we all see in basically the same way, Kyenhi is quick to point out that our perception of color is purely subjective. No two people are affected the same way (Kyenhi 22).

This is where our brains come in. Although our eyes capture the light, our brains do the real work of perception. Light entering the eye is flipped upside down and reflected to the optic nerve, then flipped again as the brain processes the image. The signal itself goes first to the thalamus, then to other various parts of the brain for processing. Neurobiologist Margaret Livingstone describes two different kinds of perception in the book *Vision and Art.* She calls these the "Where" and "What" systems. The cells in the retina, connected to the optic nerve, differentiate these two systems depending on their type. She explains that the Where system is colorblind, whereas it is sensitive to contrast and speed, motion, depth perception and special organization. The What system is responsible for color, object and face recognition. All mammals have the Where system, but only primates have the What system (46--65).

Livingstone also describes how our perception of color is dependent on those colors we see around it. The bright lights of a parking lot appear white, but are actually lemony yellow. Anyone who wears monochromatic sunglasses eventually loses the ability to perceive the color they are looking through. Colors affect each other when placed next to one another because our recognition of color is dependent on the contrast around it. This is why painters make an effort to choose colors that have certain effects on each other. Depending on the adjacent colors, a color can look dramatically different. For example, when colors of the same luminance (the same amount of black or white added) are used together, they are indistinguishable to anyone who is

colorblind. However, we perceive the color, and next to one another they create an eerie weightless effect, since the Where system is no longer in effect.

Even if every individual perceives color in a slightly different way, color can still effect us in universal ways. Itten (83-89) points out the effect each color can have on us as a whole. Blue can enchant us with the cloudless sky, moonlit night, or it can disgust a viewer as a reminder of death. Yellow, next to white, reflects light the most brightly while in its pure form, weightless and radiant. Painters use yellow as a symbol for the sun, the kingdom of heaven, or eternal light. When placed adjacent to other colors, its effect will change. Yellow directly over white loses its vibrancy, while yellow on black is brilliant. Red is one of the brightest and versatile of colors. It is often associated with war. Soldiers would often wear it into battle. It is associated as well with love and passion. Red is highly active and a powerful color of symbolism. Green is associated with nature; mixed with yellow is even brighter and younger. It can symbolize life and abundance. Next to gray, it dulls to look dead. Violet, when darkened, is suspicious, when lightened is enchanting. Violet can bring about images of death when pure and spirituality when red is added.

Matt Lowman, a senior majoring in painting at Colby-Sawyer College, describes the way color affects us. "Red is the big attractor. It is the most effective color in advertising. We are very in tuned to it. Yellow awakens us, is vibrant and easy--going, orange is violent and black is prominent and used as outlines in cartoons for this purpose," he says. He makes the point that advertisers have used color in very purposeful ways; some colors used to arouse appetite, such as McDonald's red and yellow, while we also see a lack of color as stylish and sophisticated.

But, let us look back on the art of master painters to see how color can manipulate our emotions. Artists throughout history have used color to deepen the emotional impact of a piece.

Some artists relied on a very small color palette and a high luminance, emphasizing form and light. Georges de la Tour and Rembrandt are well known for the high luminosity of their works -- the contrast is high, and the use of color is limited yet effective. Form creates the drama. In contrast, painters like Turner – an artist known for his work with ocean landscapes – used color as the stage for drama (Birren 176-179, 187). One such painting, "The Slave Ship," is an excellent example of how color can evoke emotions. (Fig. 2) The bright orange and white of the setting sun reflects itself unto the ocean – the horizon line is roughly defined. Turner used harsh whites and oranges to combine with dull and dirty greens and browns.

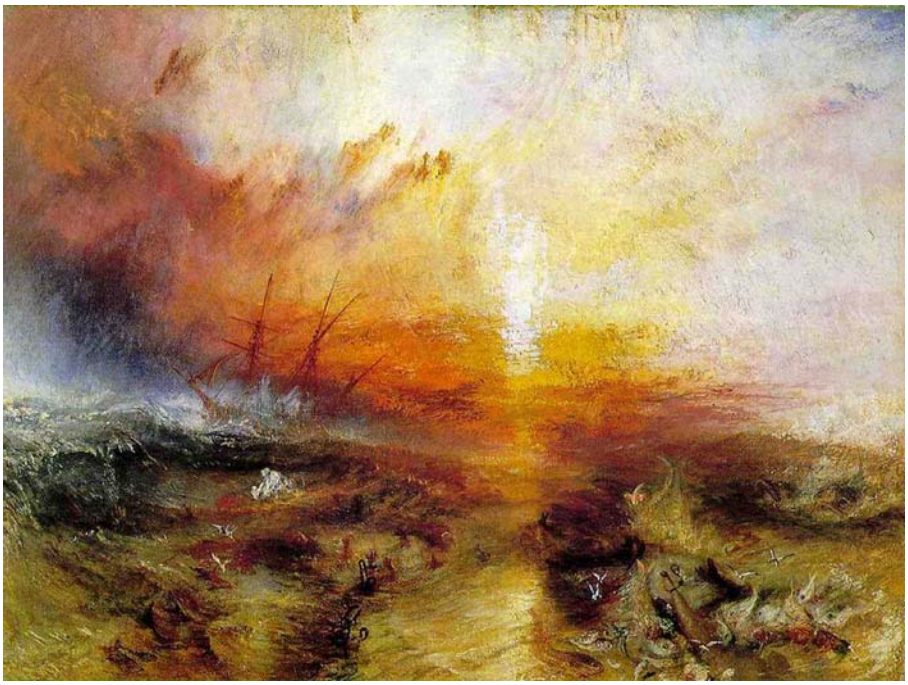

Fig. 2 Turner, J.W.M "Slave Ship." Museum of Fine Arts, Boston

The movement seems to wash the color together, as the slaves dumped overboard by slavers drift away from the distant silhouette of a slaver's ship. The sea is turbulent – Turner makes a conscious effort to avoid the peaceful blue associated with the ocean, and uses dingy, hellish colors instead. The effect of this piece would be entirely different if he had used different

colors. It is hellish, chaotic and violent. Van Gogh approached color in a more direct way – he used only the brightest colors to combine them harmoniously. His scenes seem to be swimming in the brightest sunlight, cheerful, bright and radiant. He uses color to illustrate form without relying on luminance.

Graphic designers are very precise with their use of color. A brief article on Wisegeek.com outlines the basic guidelines that all good visual advertising follows. Warm browns and reds are used in restaurants to encourage customers to linger in their warmth. Bright reds and yellows are used by fast food companies to stimulate excitement of a viewer, as well as the appetite. Conversely, cooler colors such as green and blue are often used on drug labels due to their calming effects. Black and white are said to be the best colors for advertising. They can create a sense of power and professionalism. This combined with a small amount of color is highly effective. Another article by Karen Saunders, a graphic designer, provides advice for advertisers. She suggests that gift shops should design cards with yellow, which symbolizes joy. Red can be used when the company wants someone to take action.

Steven Fischer, a former graphic designer, has an intriguing observation. Present day advertisers and corporations use detailed studies and research groups to utilize colors effectively. However, when he worked in advertising, it was very much based on what the client thought was good. He observes that colors were bright and haphazard, nowhere near the sophistication that corporations entail. He explains that corporations such as Coca-Cola, FedEx and Geico have gone as far as to copyright certain colors to create an identity. Corporations use the pantone system, a standardized matching system of color that is used universally all over the world, in which pure pigments mixed into a solid color as opposed to the dotted images seen in most printed magazines and books.

There are critics to corporate tendencies to “buy” colors. Tradii makes the claim that color is a universal thing, and is very limited to how well it can produce brand loyalty with association. While he concedes that color is indeed important, it is not the end all and be all of advertising. He sees the preoccupation of owning colors as silly, as color is owned by everyone and no one. One article explains that a growing number of companies prefer the color blue in their logos, as blue is a calming and neutral, yet effective color (Carey). Advertisers tend to use color to attract, since color advertisements are far more likely to get someone’s attention than a black and white advertisement. One study documents that by exposing consumers to reduced pricing advertisements, some in color and others identical but in black and white. It was shown that there was an increase in sales for color advertisements (Sparkman).

But how do advertisers use color exactly? Lee and Barnes, experts in marketing, attempt to answer this. They claim that color used based on personal bias of the graphic designer can lead to mistakes in advertising design. Just as Matt Lowman explained, Lee and Barnes mention that red has a strong pull. Why else would advertisers utilize it in pricings and logos? They are quick to point out, however, that too much red can quickly be overwhelming and ineffective. There must be balance. They cite a study that finds that women prefer red, while men prefer blue. Women, in turn, dislike orange, green and blue. Men dislike orange and yellow. Although they point out that cultural differences may affect color preference, there are still colors that are more effective than others in advertising. In their study, they compare magazines with different target audiences. They find that there is little difference between them, and on top of that, that advertisers often are not using color to improve the advertisements. “A single advertisement used in several different kinds of magazines may not be the most effective use of advertisement money” (Barnes 29).

Livingstone once again approaches color through the advertising tricks of the trade. Advertisers deliberately try to disable the Where system, in which we only rely on the What system, which causes us to read the advertising text slower, causing further comprehension which helps the reader remember it thoroughly. Designers achieve this is by placing words on equivalent luminous backgrounds. This causes the letters to be jittery and harder to read, yet easy to notice initially. “It is hard to read and forces you to slow down,” Livingstone points out. Additionally, advertisers use alternating contrasts on letters, also slowing down the reading speed.

Though color can be highly effective, so many advertisers use color that sometimes a lack of color can jump off the page. One article points this out, (Business Source 26) citing several examples of ads where black and white was used effectively. Often, less is more, as with Apple’s use of stark white and warm grays. These colors are used to indicate simplicity or even nostalgia. Black and white are often associated with sophistication and class. One study supports this assertion (Warner 260) by testing several subjects and comparing their reactions to color advertisements. It found that although color can help support brand familiarity, it is not as effective for catching the eye of a reader.

Color can be an effective tool in advertising indeed, but when it is over used it can appear cluttered and trashy. This goes back to Itten’s principles of color; colors must complement each other and be used sparingly. Less is more in the advertising world, so the colors used count. What should happen when red is combined with blue, which is combined with brown? There are too many colors to have any real affect at all! Many web sites have banner ads that try to get the attention of the viewer by displaying bright, flashing, conflicting colors that only serve to annoy rather than intrigue. Effective advertising affects the viewer just the way as intended, while

ineffective advertising averts the viewer away. Take Apple's advertisements. As Matt Lowman points out, Apple uses simple minimalist colors and design to indicate that their products are sleek and easy to use. (Fig 3.) The viewer gets the impression of sophistication and simplicity, just as Apple intends.

Fig. 3 Apple logo, © Apple

Advertising is complex, and much must be learned about it to fully comprehend how color can best be used – how much and how often. There are numerous cultural differences affecting how we perceive and prefer color, but color overall is associated with similar themes. The sun, bright and life giving, is yellow, nearly white, so yellow will always be associated with brightness, happiness and warmth. The culture of the day can effect what is popular – it can make brown repulsive one year and beautiful the next to fashion lovers. However, we are still happier under a cloudless blue sky or among bright fall leaves. Effective advertising knows how to tune into our universal associations with color and reach a wide audience. It can make us cry, make us laugh, and make us glad with just one image.

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