Color: The influence on visual communication

Amy Pierson
Bemidji State University
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Introduction

Of all the forms of non-verbal communication, color is considered the most instantaneous method of conveying a message. Color "stimulates and works synergistically with all of the senses, symbolizes abstract concepts and thoughts, expresses fantasy or wish fulfillment, recalls another time or place and produces an aesthetic or emotional response" (Eiseman 2000, pg. 6). Color not only attracts attention, but is important in holding the viewer's interest as well. Although color is a part of our daily lives, most people are unaware of the affect and influence that color holds. "A single patch of color can communicate more than words themselves" (Bleichner 2005, pg. 2). Designers and artists need to have an understanding of color; they must be aware of how the colors they choose to use will affect the viewer and the intended message.

What is Color?

What the human eye really sees when looking at color is the action and reaction of light. Vibrations of light meet our eyes, allowing us to see the phenomenon of light known as color. Consequently, when the light source vanishes, the color also vanishes. Light and color are inseparable; the type and amount of light greatly affects the perception of color.

Our modern understanding of color began when the color spectrum was discovered by Sir Isaac Newton in the late 1660's. While passing sunlight through a glass prism, he discovered that the white light divided into an array of colored bands. Those brilliant colored
bands became known as the color spectrum. The seven colors of the color spectrum are red, orange, yellow, green, blue, indigo, and violet. The acronym ROYGBIV is used to abbreviate these colors.

Different wavelengths of light are associated with the different hues of the spectrum. Longer wavelengths at one end of the spectrum indicate the reds, oranges, and yellows. These are the wavelengths that vibrate at the lowest frequency. Progressing towards the opposite end of the spectrum through the yellows, greens, blues, and purples of the spectral range, the wavelengths become shorter and the frequency increases (Ellinger 1980).

Each color is defined by three properties: hue, value, and intensity. Hue is the actual name by which a color is called. Examples of this include red, yellow, periwinkle, blue-violet, and chartreuse. Value is the amount of lightness or darkness in a color. Yellow is lighter than blue, and black is darker than yellow. Intensity, also known as saturation and chroma, is a measurement of the color's purity. A bright leaf-colored green is more intense or more saturated than an olive green color (Arntson 2003).

Color is relative. The human eye does not report the qualities of a color in an absolute sense. Figure 2 shows color appearing different depending on the surrounding color. The three orange squares in the top row are the exact same color, as are the three blue-green squares in the middle row and the three gray squares in the bottom row, however, they appear to be different colors. "[Color] is highly

Figure 2. Relative Color
adaptable to relative qualities of color, so that the color reported to the brain, the apparent color, is always conditioned by the surrounding and neighboring color areas” (Ellinger 1980, pg. 7).

Crossing the boundaries between art and science, color is both a physical and an emotional human phenomenon, a part of our inner consciousness. For the artist and designer, however, color has “the deepest complexity of any art element as well as being the most powerful and visually compelling formal and emotional factor in art creations” (Koening 2007).

Symbolism

A range of feelings are communicated by color through symbolic associations that stir feelings in a viewer, helping them identify with a specific theme. Color can be used to represent feelings or temperatures (see Appendices 2 and 3), can be perceived as gender specific, can be seasonal, and can have special meanings that are tied to certain cultures (Arntson 2003; Evans 2006; Bleicher 2005).

The cultural associations and meanings of a color vary from culture to culture. Green, for example, represents financial wealth in the United States, but in Indian cultures, green is associated with spiritual wealth. As communication between different cultures increases and becomes more diverse, it is becoming more and more important for the artist or designer to conduct research in order to determine the perception of a color in a given culture. Each culture holds a unique heritage of color symbolism (Evans 2006). Even the members from different age groups within the same cultural group will react differently towards certain colors.
Table 1. Symbolism in Western Culture

<table>
<thead>
<tr>
<th>Hue</th>
<th>Color Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>calming, honesty, coolness, harmony, tranquility, confidence, conservation,</td>
</tr>
<tr>
<td></td>
<td>reliability, cleanliness, wisdom, distinction</td>
</tr>
<tr>
<td>Red</td>
<td>passion, strength, energy, fire, love, excitement, sex, heat, arrogance,</td>
</tr>
<tr>
<td></td>
<td>ambition, power, danger, masculinity, blood, anger, war</td>
</tr>
<tr>
<td>Yellow</td>
<td>joy, happiness, optimism, intelligence, wealth, hope, liberalism, weakness,</td>
</tr>
<tr>
<td></td>
<td>greed, femininity</td>
</tr>
<tr>
<td>Purple</td>
<td>envy, sensuality, creativeness, enlightenment, dignity, wisdom, nobility,</td>
</tr>
<tr>
<td></td>
<td>royalty, spirituality</td>
</tr>
<tr>
<td>Orange</td>
<td>youth, fun, comedic, warmth, activity, desire, autumn, warning, danger,</td>
</tr>
<tr>
<td></td>
<td>playfulness</td>
</tr>
<tr>
<td>Green</td>
<td>nature, spring, fertility, youth, wealth, money, environment, generosity,</td>
</tr>
<tr>
<td></td>
<td>aggression, jealousy</td>
</tr>
<tr>
<td>Brown</td>
<td>boldness, depth, nature, richness, stability, tradition, dirt, dullness,</td>
</tr>
<tr>
<td></td>
<td>heaviens, poverty, earth</td>
</tr>
<tr>
<td>White</td>
<td>purity, peace, innocence, cleanliness, humility, sterility, simplicity,</td>
</tr>
<tr>
<td></td>
<td>light</td>
</tr>
<tr>
<td>Black</td>
<td>absence, death, anger, mystery, sophistication, power, elegance, formality,</td>
</tr>
<tr>
<td></td>
<td>evil</td>
</tr>
</tbody>
</table>

Table 2. Symbolism in Other Cultures

<table>
<thead>
<tr>
<th>Hue</th>
<th>Color Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue</td>
<td>very positive (India), believed to be universally the color having the most positive and fewest negative associations</td>
</tr>
<tr>
<td>Red</td>
<td>fertility and used as a wedding color (India), celebration, luck, and prosperity (China), socialism (many countries)</td>
</tr>
<tr>
<td>Yellow</td>
<td>imperial color sharing many of the same associations of purple in Western cultures (most Asian cultures)</td>
</tr>
<tr>
<td>Orange</td>
<td>Protestantism (in places having a history of conflict between Catholics and Protestants)</td>
</tr>
<tr>
<td>Green</td>
<td>Islam (India), “having a green hat” metaphorically means a man’s wife is cheating on him (China), Catholicism (in places having a history of conflict between Catholics and Protestants)</td>
</tr>
<tr>
<td>Brown</td>
<td>boldness, depth, nature, richness, stability, tradition, dirt, dullness, heaviens, poverty, earth</td>
</tr>
<tr>
<td>White</td>
<td>mourning (India), mourning and death (China)</td>
</tr>
<tr>
<td>Black</td>
<td>conservatism (many countries)</td>
</tr>
</tbody>
</table>

In the design field, colors must be chosen carefully, as color exerts a strong symbolic force, learned through tradition. This force needs to be considered when selecting the colors that
will be used to convey a message. The correct color choice is crucial to the correct message.

When dealing with color symbolism, a vital point to watch is that the color used does not symbolize something that is distasteful or inappropriate (see Appendix 2). For example, in China white may be appropriate for a person to wear to a funeral, since white represents mourning and death in the Chinese culture. However, in the United States, wearing white to a funeral would be seen as inappropriate. Black would be the more appropriate color choice. The last thing a designer would want to do is unintentionally offend a certain group of people within the targeted audience.

Psychology

Differing from color symbolism, color psychology is the effect of color on human behavior and feeling. Colors are never emotionally neutral; they always hold the power to evoke specific emotional responses in the viewer. Color is a complex subject and many different considerations impact its persuasive power (Stewart 2002; Arntson 2003). In publication design, the power of color is a significant factor and should be utilized to the full potential. Designers need to use colors that will attract and connect with the targeted audience and communicate the desired mood. Colors that may work for one type of audience may not be appropriate for another audience. For example, toddlers are attracted to bright, bold colors. If the designer’s task was to create the graphics for the packaging of a new toy, he or she would want to make sure to use bright colors that will attract a toddler’s attention so the toddler will see and want that toy. On the other hand, if the same designer was to design an informational brochure for an audience consisting of senior citizens, he or she should use colors that are muted and refrain from using the bright colors used in the packaging for the toddler’s toy. The colors used play an important
role in achieving the publication's goal by supporting the intended mood or attitude (Evans 2006).

Each hue of the color spectrum causes a different reaction in the viewer, most of which are unnoticed by the viewer. The spectrum begins with red, a dramatic, highly visible hue that enhances energy and stimulates the production of red blood cells. At the sight of red, “a chemical message is sent to your adrenal medulla and releases the hormone epinephrine. This alters your body chemistry, causing you to breathe more rapidly, increase your blood pressure, pulse rate, heartbeat, your flow of adrenaline and GSR – Galvanic Skin Response (a fancy term for perspiration and the basis of lie detector tests). These reactions are physiological, and we have no control over the effect. As a result, red is indelibly imprinted on the human mind to connect with excitement and high energy” (Eiseman 2000, pg. 19). Red’s aggressive nature commands attention and demands an action. Passionate, provocative, exciting, and dynamic, red is also associated with sexuality, aggression, passion, violence, blood, and fire. Darkened shades are seen as rich, refined, expensive, authoritative, mature, lush, opulent, and elegant. Red is often the favored hue of a sports car and sports team and is found in most national colors. Pure, bright, intense tones of red are less likely to be chosen for a corporate logo, but shades that are darkened towards black may be a number one choice (Arntson 2003; Eiseman 2000; Koenig
Pink has a lighter feeling than red and is seen as energetic, fun, youthful, exciting, soft, subtle, and sentimental. It is associated with romanticism and is perceived as sweet tasting and sweet smelling (Eiseman 2000).

Progression through the spectrum leads to orange. Orange increases sexual stimulation and increases pleasure. Giving off a giddy, cartoon-like impression, orange is not a good choice for a serious message, but is an excellent color for toys, games, and inexpensive plastics for younger age groups and people who are young at heart. Certain hues of orange have an ethnic feeling, and the softer shades are more pleasing to the sophisticated eye and are very appealing to the upscale market. Youth, curiosity, warmth, assertiveness, high arousal, vitality, nurturing, and approachability are just some associations of orange. The peach-colored hues of orange are typically associated with deliciousness, health, and are seen as flattering (Koenig 2007; Eiseman 2000).

The next color in the spectrum is the bright and happy color of yellow. Yellow is the hue that is lightest in value and seems to emit light of its own. This hue is thought to have antibacterial properties. Some associations that go with yellow are wisdom, clarity, warmth, good health, optimism, sunshine, light, imagination, enlightenment, and intensity. Yellow is a color that is cheerful, mellow, soft to the touch, and was at one time associated with cowardliness and weakness. The lighter, creamy shades are seen as delicious because of the resemblance to banana crème and custard. Greenish-yellows are some of the least popular colors and the bold combination of yellow and black is hard to ignore (Koenig 2007, Eiseman 2000).

Continuing through the spectrum of colors, we arrive at green. Lying in the middle of the spectrum, green is considered calming and can bring balance to the individual, which is why
green is sometimes used to treat bacterial infections. Oftentimes seen as soothing and cooling, green is a favored color for products such as menthol cigarettes and noncola beverages such as juices or teas. Green is quiet, soothing, and some associations are the environment, cleanliness, balance, and organic substances (Arntson 2003; Koenig 2007).

Following green in the spectral range is blue. Blue decreases the toxins in the body and is said to aid in promoting knowledge and self-assuredness and inspiring confidence. Blue, the color of the sky and of water, is seen as a constant in life and can serve as a sort of foundation. Associated with cleanliness, honesty, and calmness, blue represents reliability, trustworthiness, dependability, commitment, serenity, restfulness, and calming. In the darker values, this hue is associated with authority (Arntson 2003; Koenig 2007; Eiseman 2000).

Violet, or purple, provides the other end to the color spectrum. This color can be used for calming the nervous system and promoting spiritual awakening and creativity, a reason it is preferred by creative and eccentric types of people. Purple is a conflicting color, blending the excitement of red with the tranquility of blue. In the different tints and shades, purple is dignified and rich, sophisticated and subtle, sentimental and nostalgic, and implies darkness, night, and water. This hue is associated with royalty, delicacy, spirituality, and sweetness (Bleicher 2005; Koenig 2007; Eiseman 2000).

Although not included in the seven color list of the color spectrum, brown, black, and white cannot be forgotten. Different hues of brown have a connection to the earth. Brown is a popular and enticing color in the food industry, especially with the growing popularity of coffee franchises and chocolate shops. Some associations of this rich color are hearth and home, substance, sustainability, sophistication, nature, and stability (Eiseman 2000).

White, in definition, is not a color. "...thought of in terms of light, [white] is the pres-
ence of all color as Sir Isaac Newton discovered in his experiments with prisms where he demonstrated that white light contained all of the colors of the spectrum” (Eiseman 2000, pg. 56). For simplicity, white is often referred to as a color. White has a feeling of purity and simplicity with a sense of cleanliness, making this hue an excellent choice for hygiene and infant products. White can symbolize minimalism and can lack a warm or welcoming feeling (Eiseman 2000).

Similar to white, black is not, by definition, a color, but is the absence of any light at all. Also like white, black is referred to as a color. Black is mysterious, powerful, and dramatic. Representing sophistication, consumers see black as elegant and having an expensive feeling. Black is a solid color and serves well as a foundation (Eiseman 2000).

Red, pink, orange, yellow, brown, green, blue, violet, and everything in between…there are endless possibilities when it comes to making a color selection. The key to good color usage, however, is the awareness and understanding of the viewers’ conscious and subconscious reactions to the colors that are used. This is especially true when designing food packages. A specific red hue may represent a poison rather than cherries, and some greens, especially the different yellow-greens, are associated with unappetizing thoughts (Cheskin 1947). In mid 2000, Heinz released a new type of ketchup: green ketchup. Once the initial craze of purchasing the green ketchup wore off, Heinz discovered that green ketchup wasn’t very popular with consumers. Although there was no difference in taste, because of the color many people perceived a different, less-appealing taste. Green, especially in relation to food, is typically associated with mold, making the color an unpopular choice for food products.

Communicating with Color

Color is a universal language that crosses cultural boundaries. Not only do certain colors
and combinations of colors stir feelings in a viewer, helping him or her identify with a social or cultural theme, but color usage also adds tremendous meaning to visual communication. Color delivers an instantaneous impression, provides an emphasis, and enhances the visual message (See Appendices 5 and 6) (Eiseman 2000; Evans 2006; Cheskin 1947). “The power that color wields is seen at every level of communication: in corporate identification and logos, signage, advertising on television, billboards, in print media and packaging, on the computer and at point-of-purchase” (Eiseman 2000, pg. 7). To obtain the full value of that power, however, color must be used appropriately (See Appendices 1-9).

Color is especially a significant part of publication design. The printed word itself can be strengthened with the use of color. Multiple studies show that viewers will respond to the specific color before reading a label or making sense of imagery. Besides strengthening the message, color can be used to create a focal point, emphasize or highlight a particular component of the publication, and activate different graphical elements. The usage of color can control hierarchy and provide unity, throughout a single page or throughout a multi-paged publication (Stewart 2002; Evans 2006; Ellinger 1980).

To be effective in a package design, color must attract and hold attention and get “favorable action from the public” (Cheskin 1947, pg. 179). Color must send a positive and irresistible image of a product to the consumer. The brand identity and message of what the product is all about must be communicated well enough to make the sale. Products are judged by the packaging they are sold in, and the packaging must sell the product (Eiseman 2000; Cheskin 1947).

The correct color performs the following functions in advertising:

1. it has a specific psychological effect, producing a definite emotional sensation
2. it has symbolic meaning
3. it quickly catches the eye
4. it has identity and retention power
5. it has aesthetic appeal
6. it produces the effect of realism (Cheskin 1947).

Importance of Color

“The organization of color is an important part of the designer’s problem. Everyone who works creatively with color needs a sound understanding not only of the resources of his [or her] colors and their expressive potentials but of the means and techniques of ordering his [or her] color so that he [or she] can convey his [or her] personal expression in its most effective form” (Ellinger 1980, pg. 1).

Playing a vital role in culture and daily life, color may be the single most important aspect of a design. Having the power to stimulate, excite, increase appetite, smooth, disturb, suggest or reflect reality, create a feeling of warmth or coolness, and convey emotions, color works with all of the senses, symbolizing abstract concepts and thoughts, expressing fantasy or wish fulfillment, or recalling another time or place. Colors are remembered more easily than words (Eiseman 2000; Koenig 2007; Ellinger 1980; Bleicher 2005).

Much of the human reaction to color is subliminal. Specific responses to colors greatly vary depending on where and how the color is used, but there are certain colors that affect everyone in predictable and measurable ways. The untrained eye is generally unaware of the pervasive and persuasive powers held by color, but for a designer, knowing the ways in which people respond to color can be a powerful design tool.
Operational Definitions

**Hue:** the actual name of a color

**Color wheel:** a circular depiction of hues and their relationships

**Gamut:** the range of hues available

**Grayscale:** a representation of value broken down into a finite number of steps

**Luminosity:** the amount of light reflected from the surface of a color

**Value:** the lightness or darkness of a color

**Intensity:** the property of color referring to the purity, saturation, or chroma

**Saturation:** the property of color referring to the purity, intensity, or chroma

**Complementary colors:** colors that are directly opposite each other on the color wheel

**Analogous colors:** hues adjacent to each other on the color wheel

**Warm color:** a color having warm associations such as red, orange, and yellow

**Cool color:** a color having cool associations such as green, blue, and violet

**Additive colors:** system of color using light

**Subtractive colors:** system of color using pigments and dyes

**Local color:** the color of an object under normal lighting conditions

**Relative color:** the color of an object in relation to another object

**Achromatic:** colors containing no chroma or hue

**Monochromatic:** a color scheme based on a single hue, including the full range of tints, tones, and shades of that color

**Prismatic hues:** pure hues representing the color at their highest saturation level

**Tint:** the hue plus the addition of white

**Shade:** the hue plus the addition of black
Double complementary: a color scheme using two adjacent complementary pairs

Split complementary: a color scheme using a hue and the two hues adjacent to its complement

Triad: three hues that are equal distance from each other on the color wheel

Primary color: the three most basic hues, red, yellow, and blue, that make up all the other colors

Secondary color: colors made by mixing equal parts of two primary colors together

Neutral: the opposite of a hue

CMYK: process colors (cyan, magenta, yellow, and black) used for commercial printing and color photography

RGB: color mode used by computer monitors and also the additive primaries of light
Resources


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www.pantone.com
Appendices
Thompson Funeral Home

Designer’s Task: Select the colors to use for this full-color advertisement design for the Thompson Funeral Home
Incorrect Color Usage

The bright colors used in this version of the advertisement generally would catch the viewer's attention, however, if the viewer is looking for a funeral home, he or she will not expect to see bright colors like this and the ad will most likely be overlooked.

Bold, bright colors such as the colors used in this version tend to give off a happy, energetic, and festive feeling. This feeling would not be appropriate for the times a funeral home is needed. Using bright festive colors will subliminally tell the viewer that the employees at the funeral home do not take their work seriously and would not be very sympathetic to work with.

Colors are considered warm or cool. Warm colors give off a warm feeling and tend to "pop out" from the page while cool colors have a cool feeling and tend to "sink into" the page. The blues and greens used are cool colors and give an overall cool feeling to the entire advertisement. Death already has a cold feeling and this version of the advertisement would only make the viewer feel colder and even more uncomfortable during the trying time in his or her life. Cool colors would not be an appropriate choice to use in this case.
Correct Color Usage

The muted colors used in this version of the advertisement provide a comforting feeling to the viewer. These colors are much more subtle and serious than the colors in the previous version.

The death of a loved one is a difficult event to deal with. The comforting feeling of this version of the advertisement implies that the Thompson Funeral Home employees will be caring, comforting, and will help the family through the hard time.

The red tints that are used in this version are warm colors, versus the cool colors used in the previous version. The warm colors give the entire advertisement a warm feeling. The warmth of this advertisement will help tremendously to calm the viewer and provide an overall sense of comfort. Warm colors used in this case would negate the coldness of death.
Cinco de Mayo

FRIDAY, MAY 5TH
5:00 PM - 1:00 AM
DOWNTOWN BAR
MINNEAPOLIS

Designer’s Task: Select the colors to use for this full-color poster design for a Cinco de Mayo festival
Incorrect Color Usage

Posters are typically used to catch the viewer’s attention from a distance. They aren’t always viewed close-up like a book or magazine would be. Keeping this in mind, the colors that are used in this version of the poster would not work so well. The pastel colors most likely would not catch a person’s attention from across the room or as he or she is walking by.

The lighter tints of these colors are typically associated with infants. A quick glance at this design will make the viewer think the poster is something about infants or something intended for new parents or soon-to-be parents.

The colors used in this version are very similar. They are all light tints of analogous colors. The reason this poster would not stand out is because the colors don’t contrast. It is almost hard to notice where one color ends and another begins. Lack of contrast can work for some things, but a poster for a Mexican festival is not one of them.
Correct Color Usage

The bright yet bold colors that are used in this version will definitely catch the eye of a person walking by. This poster hanging up would be really hard to ignore.

The colors used in this version are not only more typically associated with Mexico, but they also provide a great deal of contrast. Red and green are complimentary colors, which mean they naturally contrast each other, and purple and yellow are complimentary colors. The dark values of the green and red used contrast the light value of the yellow background. The black outlines really help compliment the contrast and the black information in the lower right hand corner really stands out against the yellow background.

Contrasting colors really help to make a publication noticeable.
Incorrect Color Usage

Banks want their customers to see them as honest, stable, reliable, and trustworthy. The colors used in the logo can help or hurt this intended image.

Yellow and orange would not be appropriate colors to use to imply this feeling. Yellow is seen as a light-hearted color but once represented weakness and cowardliness. Orange gives off a giddy and cartoon-like impression. Both the yellow and orange colors used in this version of the logo are associated with youth and comedy.

These two colors used together for a bank logo give an immature feeling and childish image. A bank would not want to give its customers this impression.
Correct Usage

The colors used in this version of the logo do a better job of providing the feelings of honesty, stability, reliability, and trustworthiness than the previous version.

Blue and green are excellent color choices for a bank to use in their logo, especially a combination of blue and green like the color used here. Green is located in the middle of the color spectrum and provides a sense of balance while blue represents honesty, dependability, commitment, and trustworthiness.

The dark gray color that is used, along with the dark value of the blue-green color, helps to give the logo a mature and more sophisticated feeling.

A bank using these colors is likely to be more successful than a bank using the colors in the previous version.