David Levine
December 14, 2011
Color Theory Reflection

In taking Color Theory, I have learned to pay more attention to the visual world around me. I have learned to not only look at form, but to look at texture, detail, and most of all, color. I have learned that color is not a minor detail; it is an indicator (also a biomarker) that provides information about the environment as a whole. I have learned that choosing colors is like composing music; both make use of harmony, intervals, and relativity to create expressive compositions. Every object we perceive has a color, but color is much more than just a physical property. Our world is saturated with color, and as such we take it for granted, but it has immense power over our perception of reality. Colors are memories, emotions, and experiences. Sometimes color can be smells and tastes and sounds, as Wassily Kandinsky describes, "The sound of colors is so definite that it would be hard to find anyone who would express bright yellow with bass notes or dark lake with treble"[1]. How can something so simple beget so much meaning and create such complex interactions?

Color is not static; it is an emergent property that appears at the intersection of light and matter. This fact gives rise to some of its amazing properties. Color is inseparable from its surroundings. Color is an infinite continuum within a precise range of wavelengths along the electromagnetic spectrum that we have evolved to sense as light. Color is energy that we can see. Color can be created additively, when using direct light sources, or subtractively, when light is first reflected off of another object before reaching the eye.

The physics of color is just the beginning; color is nonexistent without an observer, and the human perception of color results in yet more interesting characteristics. The most notable is that our interpretation of color is dependent on the colors around it[2]. The repercussions of this observation are substantial: subtractive grounds, one color appearing as two, two colors appearing as one, special effects, vanishing boundaries, vibration, fluting, and transparence[3]. Each of these phenomena can be used to create powerful effects that evoke particular feelings in the viewer. For example, vibration creates a sense of instability and restlessness and is very attention grabbing, but used too much it can be dizzying.

The complications involved in the generation and recognition of color makes color reproduction extremely difficult. Leonardo Da Vinci explains one such predicament involving lighting, "The surface of an object partakes of the colour of the light which illuminates it"[4]. Other factors include the source from which the color radiates (paper, an lcd screen, glass, etc.) and the neighboring colors[5]. As such, color is transient, unstable, and elusive.

Moving deeper, past the science of color and its perception, we learn that color has cultural, symbolic, and associative significance[6]. While many societies share similarities in what certain colors mean, such as bright red signifying passion, there is an amazing amount of contradiction and disparity. Red is the color of good luck in China, and the same concept is symbolized by the color green in America[7]. Colors are deeply ingrained in our thought processes and language as demonstrated by their subconscious association with objects (stop signs are red, school busses are yellow, red is hot, blue is cold, gray matter, white rabbit), ideas (America is red, white, and blue; Christmas is green and red; cowardice is yellow; envy is green), and idioms (the blues, black market, blacklist, blackout, caught red-handed, green thumb, in the red, out of the blue, off-color, red-letter day, white lie, with flying colors, scarlet letter)[8].

One would think that with such importance and diversity, the study and communication of colors would be a strictly categorized affair, but it is in actuality a mess of colorless green ideas sleeping furiously and other nonsense[9]. As Josef Albers explains, "If one says "Red" (the name of a color) and there are 50 people listening, it can be expected that there will be 50 reds in their minds. And one can be sure that all of these reds will be very different"[10]. It is impossible to assign a name to every color, both because there are an infinite amount and we couldn't possibly remember them all. Even when referring to general classifications such as "orange", there is little consensus regarding where those ranges begin and end in the spectrum. Pablo Picasso vents his frustration, "They'll sell you thousands of greens. Veronese green and emerald green and cadmium green and any sort of green you like; but that particular green, never"[11]. The compromised solution is a working language that aims to describe the relative qualities of colors (hue, value, chroma, and saturation) rather than attempt to name each one, along with a basic color wheel

typically composed of twelve colors[12]. Using these tools, artists and designers are able to converse regarding color and create an assorted range of color schemes and palettes.

Now that we have learned about the role of color from its inception to its specialized vocabulary, we can begin to apply its usage as an effective tool in conveying messages. Effective communication utilizes as little information as possible while still transmitting ideas that are coherent, clear, and powerful. Color is an indispensible tool in this process, indeed it is inseparable. Every facet of a form of communication needs to be considered and intelligently decided upon, from the wording of the message itself to the colors used to draw attention to and transmit that message. The hands-on studio classes helped bridge our conceptual understanding with tangible examples of the relativity of color. Now we were able to use each perceptual and symbolic tool to create our posters of color, the goal of which were to imply an adjective and state of mind through the choice of a specific color palette. The final project we completed, in which we had to represent a culture using color, involved portraying an even more complicated and information rich concept, although this time we could use any color scheme. In this way, the class was organized so that each concept and exercise built upon the next, together creating a whole more functional and versatile than its parts.

When I would tell people I was taking a color theory class, they would ask what we could possibly have to learn; everyone knows that red is belligerent, blue is calming, and so on. Although we all have this basic and intuitive understanding, through these projects I have been able to not only deliberately apply that knowledge, but expand upon it in unexpected ways. I have learned that it is very possible to create an angry looking blue and a calming red, that these basic assumptions can be stretched and countered. Taking part in these experiments first hand has led me to many conclusions I would not have thought possible, or thought about at all. I no longer believe there is such a thing as an ugly palette. While some color combinations are more pleasing to me than others, I have developed an appreciation for the unexpected and an aptitude for creating coherence out of confusion.

Color is beautiful because as something so simple, commonplace, and accessible, it creates so much meaning and complexity. As a designer, scientist, and human being, I find joy in discovering and appreciating this elegant intricacy.

**References**

1.  Kandinsky, Wassily. *Concerning the Spiritual in Art* (New York: Dover Publications, 1977), pp. 41

2.  Albers, Josef. *Interaction of Color: Revised and Expanded Edition* (New Haven: Yale UP, 2006), pp. 8-11

3.  Holtzschue, Linda. *Understanding Color: An Introduction for Designers* (Hoboken: Wiley, 3$^{rd}$ ed, 2006), pp. 70-81

4.  Da Vinci, Leonardo. "Perspective of Colour and Aerial Perspective." *The Notebooks of Leonardo Da Vinci*.

5.  *Ibid*. 3, pp. 2-5

6.  *Ibid*. 3, pp. 40-41

7.  Mccandless, David. "Colours In Cultures." *Information Is Beautiful*. Apr. 2009. Web. 11 Dec. 2011. http://www.informationisbeautiful.net/visualizations/colours-in-cultures

8.  "Color Idioms." *The Idiom Connection*. Web. 11 Dec. 2011. http://www.idiomconnection.com/color.html

9.  Chomsky, Noam. *Syntactic Structures*. (The Hague/Paris: Mouton, 1957), pp. 15.

10. *Ibid*. 2, pp. 3

11. Sickler, Dean. *The Keys to Color* (Chatham: Dundean Studios, 2010), pp. 32

12. *Ibid*. 3, pp. 44-47