Color – Effects of a Perceived Object

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Colorful Questions:
Some questions that an avid gardener may query while contemplating their garden includes:

- What is color?
- Does it have dimensions?
- Does it affect our mental state and emotions?
- Does it have an impact on our perception of objects?
- What colors do we take most notice of in everyday life, and are we color-deprived?

What is color?
Color is the perceived phenomenon that occurs during daylight or under illumination. Color in the brain's interpretation of a wavelength of light that is reflected from an object and hits the retina. For example, a green object absorbs all the colors of the spectrum except green, which is reflected from that object. A white object reflects all colors of the spectrum, while a black object absorbs all colors. The longest wavelength of light we can perceive is red, and the shortest is violet. Color is also one of the ‘Elements of Design’, which in addition to Line, Form, Mass and Texture compose the building blocks of fine garden composition.

Does it have dimensions?
Color is broken down into three dimensions: hue, value and intensity. Each of the six pure colors of the spectrum is called a hue. White light (sunlight) is broken down into three primary colors (yellow, red and blue) and three secondary colors (green, orange and violet). The primary colors receive their status since they can be mixed to create the secondary colors (red + blue = violet, red + yellow = orange, yellow + blue = green). The hues are usefully arranged on a color wheel of alternating primary and secondary colors. Colors opposite each other on the wheel are called complementary colors, while the colors adjacent to each other are harmonizing colors. This is a useful tool as a garden designer. If you wish to provide a garden with colors that blend, you would select adjacent colors. If you wish to provide impact, select complementary colors.

Value is the second dimension. It is the amount of lightness or darkness of a hue or color blend. If white is added to a color, it is called a tint, while the addition of black creates a shade. Not all hues have the same inherent value. Yellow is the brightest hue and has the highest innate value, while violet has the lowest innate value.

Intensity is the third dimension. Intensity measures the amount of gray that is added to a color. A color with low intensity is diluted with a lot of gray, and appears muted, dull and boring unto itself.
Does it affect our mental state and emotions?
Color greatly affects our minds and emotions. Each hue may impact individuals differently, due to our varying personalities and brain configuration. When selecting plants for color in the garden, it is important to understand:

- The visual effects of each color.
- The effects these colors have on the mind.
- The effects incurred by the juxtaposition of certain colors.

The hot colors (red, orange and yellow) often stimulate emotions. In the N.J. area, these colors often appear in women’s clothing and are often the preferred colors of men for flowers. The cool colors (blue, violet and green) calm the emotions, and are considered more conservative. These are the colors most typically found in men’s clothing, but are the preferred colors of flowers for women (with the exception of the mostly male appreciated lawn!).

Red – It is the first color that we notice. It symbolizes strong emotions, such as love, anger, aggression, gravity, energy, dignity, grace and attractiveness. Red colors increase tensions and blood pressure.

Orange – An invigorating as well as unnerving color. Orange appears to stimulate the emotions and not the body. When discussing the wish list of colors with a client, most people dislike orange. Most Americans do not wish to excite or come in contact with their emotions (Cool Hand Luke/Clint Eastwood image).

Yellow – Denotes warming, quickness, liveliness and aspiring. It is difficult to look at for long periods of time, especially by highly nervous individuals. It stimulates the central nervous system. Dark yellow is often associated with deceit or cowardice; hence an individual has a yellow streak! If the yellow is pale and glowing, it denotes wisdom and high intelligence.

Green – Produces a calm, balanced feeling. Releases tensions, lowers blood pressure and is considered to be the color for fertility. Interestingly, if a person likes dark or dull green they are supposedly interested (jealous) of the affairs of others (green with envy).

Violet – Much warmer than blue, it has often been associated with royalty, since the dyes needed to color cloth were the most expensive. Although red and violet are at the opposite end of the perceivable color spectrum (red wavelengths are long, violet wavelengths are short), violet appears to have some red overtones. This would make sense, since red and blue combined produce violet. The shortest perceivable violet wavelengths stimulate the red/green simultaneous contrast, triggering a red overtone and giving this hue a warm appearance.

Blue – Since we are accustomed to the sky in the distance, blue is a pleasing background color. It is tranquil, sometimes empty, cold, distant and relaxing. Blue in the garden gives depth. Do consider this though: the hottest part of a flame is the blue core!

Brown – The combination of red and green and not on the color wheel! It is the reason why brown clothing or dark brown mulch looks good when paired with reds or greens.

Does color affect our perception of plants, objects and people?
Most certainly yes! Green is the color we are most surrounded by in nature (excluding the blue and gray of the sky). Not surprisingly, people can perceive more shades and tints of green than any other hue. Also, green happens to coincide with the eyes’ natural
focal point. Thus, green produces that calm, balanced feeling. If a hot colored object such as red is substituted for a green object, we must refocus our eyes to a point in front of the object. As a result, the object appears to advance towards the viewer. If a cool colored object was substituted for the green item, the eye must refocus to a point beyond the object. The object then appears to recede from the viewer. Thus, a heavy use of red in the garden (even brick walkways) will make the garden space appear smaller. Use of green will create a restful garden, and will not alter the gardens physical size, and the use of blue (such as bluestone paving) will make the garden longer or larger.

The time of day and the relative intensity of the sun also affect our perception of colored objects. Early morning light has a cool, blue quality that enhances blue flowers, but makes greens more olive and reds more maroon. Mid-day sun tends to add yellow and fades colors. Evening sunlight favors the red spectrum, enhancing the reds and making other colors mellow. Countries close to the equator, having a stronger more intense sunlight, need to use colors with a higher intensity. Otherwise, they will appear washed out and weak. As you travel away from the equator, the sun becomes weaker, providing less of a yellowing or fading effect. Hence, countries in the more temperate zones can use grays and colors with lower values with great effect, while bright reds and oranges will appear garish.

What colors do we take most notice of in everyday life?
The colors we as humans perceive in everyday life differ from one person to another (different Central Nervous System). This is particularly true of a phenomenon called successive contrast or after-image. Stare at a bright red object for 30 seconds. Then look at a white wall or blank piece of paper. The image will reappear, but it will be green. An orange object will induce a blue after image, while a yellow object creates a violet image. Oddly, about 15% of the population does not witness this event. By contrast, simultaneous contrast is instant. It is the brain’s altering of one color with the complement of a neighboring color (but a true after image is not produced). Since we are not viewing a flower, leaf or other object in isolation in the garden, the effect of simultaneous contrast is very real when considering color combinations. Buildings will have a reddish glow when perceived along a tree lined avenue (hopefully not Bradford Pears!). The bark of an Acer griseum glows more deeply when the foliage of summer is present, not during the winter when only bare branches are present. If you do not wish to alter a color by this ‘mental effect’, a backdrop of gray, white or black will permit the color to remain ‘true’ since none of these illicit an after-effect. However, each of these colors does have an effect on neighboring colors. White will deepen and intensify the color, black will brighten the color, and gray enhances the purity and brightness of its neighbors. White demands a lot of attention, gray is beneficial in most cases, and black is not really present in the garden, unless as a painted wall or deep shadows.

So, are we color deprived?
You bet! The most colorful thing that we are exposed to on a day-to-day basis is the automobile, and even the colors of cars have become blander with the passing of time. The current favorite is silver, followed by white (are people avoiding colors to avoid controversy, emotions and perception by others?). House colors have gone more to
whites and beiges. Office buildings are often drab grays (a color found to make men nervous and angry) and browns. The paths that we travel used to be green, but then slowly became the brown of bare earth. Now they are the solemn colors of blacktop and concrete. It has become increasingly evident that we need to interject more color into our lives.

So, how should we interject the necessary and needed color? Every garden should have at least three major components or spaces. There should be a portion with a peaceful, introspective feeling. This would be determined mostly by shades of green, some blues, violets, and whites. Secondly, there should be a space that creates a calming, distant feeling – a feeling of the past and contemplation. This would be a mostly blue and violet garden. Finally, there should be a room of invigoration that inspires and drives us to the future. Of course, this would be the hotter colors. If one were to segregate these three components into gardens around the home, they would probably evolve as follows:

1. The introspective and peaceful garden should be the front yard. It would be accepted by most of the neighbors.
2. The contemplation garden would be found adjacent to a den or study of the house and would be an indoor/outdoor space where you go to concentrate, contemplate and study.
3. As for the invigorating garden, it would be located by the patio, porch or swimming pool. Playful and bright colors, refreshing the spirit (not the drinks!) and providing pleasant grounds for entertaining guests. Such rooms are an absolute must for every garden lover!

The garden, regardless of scale, should provide a restful retreat in which we, as humans, become recharged and reinvigorated by color. In any garden in the northeastern US, especially during the summer months, cool colors are going to appear more pleasing and calming than warm colors. However, they can also become boring. Interjecting small amounts of hot colors in the mix creates points of contention and tension (raising our blood pressure and stimulating the CNS) that every garden requires in order to maintain the focus of the viewer. We need a mix of colors to excite us, otherwise, we are truly boring creatures!