CMY Color Wheel Program

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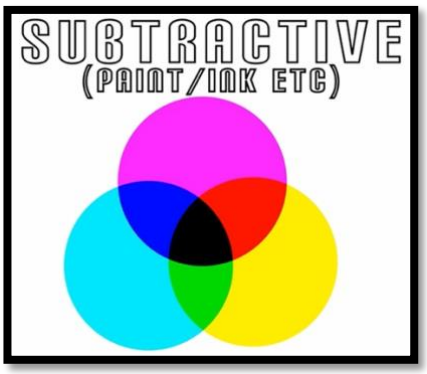
Additive Color vs Subtractive Color
Scott Naismith Video
https://www.youtube.com/watch?v=jQqxN8LpGzw

Additive color is the term used for color created by light. The primary additive colors are red, green, and blue (RGB). We start with black and add light, overlapping two to get the secondary colors, cyan, and magenta, and yellow (CMY). When all three primaries overlap, we get white light.



Subtractive color, like paint, works the opposite way. We only see the color that is not absorbed by the object. Black objects absorb all light; white reflects all light. Two different paint colors added together subtract from the amount of light reflected to your eyes.

Let's take blue for example, a color most people agree is a primary. Looking back at the RGB light diagram, we know that a blue object must be absorbing all the green and red light. On the traditional color wheel, we're told that if we add primary blue and primary yellow, we get secondary green. But this can't be true, because yellow paint absorbs blue light, and if we add the absorption properties of blue—red and green light—we will now have a paint that absorbs all three lights to some level, which would make green mixed this way a tertiary color.

The definition of a primary color is a color that cannot be mixed. In the subtractive color system of mixing paints, a primary color must only absorb one of the RGB lights. So the real primary colors are:

Cyan, Magenta and Yellow (CMY)

(CMYK are the colors used in printers.) Cyan absorbs red, magenta the green, and yellow the blue light, until all light is absorbed in the black. If the purpose of a color wheel is to mix clean secondary and additional colors, then here is the true color wheel:

Primaries: CMY--Cyan, Magenta, and Yellow

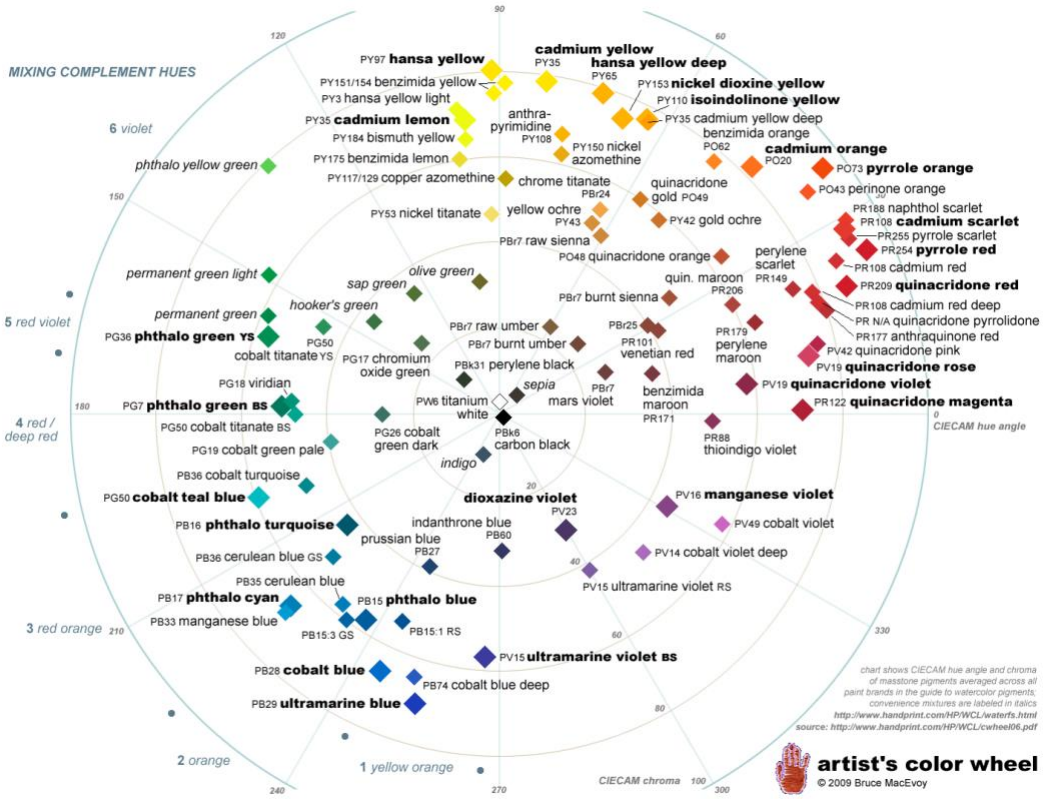
Secondaries: RGB--Red, Green, and Blue

How This Can Inform Our Work

The purpose of using a color wheel goes beyond what this CMY wheel can do. This wheel shows the visual complements. This can help us to create striking contrasts by placing the complements near each other in our work. But it doesn't help with mixing; it is based on how light works: look back at the additive diagram, and you can see that blue light plus yellow light equals white. But they are not mixing complements—blue and yellow paint make green.

When I was an oil painter, I loved creating limited palettes. A palette containing just one or two of each primary color can simplify an artist's life, and I tried many, looking for that perfect one. At first, mine were based on the traditional RYB wheel, which is culturally embedded, but weak at mixing clean colors. Then, through John McLaren, I discovered handprint.com/ and Bruce MacEvoy's Artist's Color Wheel. On the site, the color theory is a very deep maze, and I can't claim to understand a tenth of it. (I recommend looking through the site to be dazzled by the science.)

MacEvoy's color wheel is straightforward, if complex, and literally shows you which paints are good mixing complements. The way to determine if two paints are mixing complements is whether they make a nice, neutral grey together. McEvoy has done all the work for us!



If we compare the placement of colors in McEvoy's wheel to the CMY wheel, we can see similarities. So, when I painted a CMY wheel in preparation for this program, I realized that

just by moving the blue closer to cyan, and including blue violet, I could make a useful mixing chart. Cyan, magenta, and yellow paints can be used as a limited palette. These three with the addition of a Transparent Red Oxide or other deep PR101pigment (and white if needed), can produce a wide variety of colors, intensities, and values.