Lab 6: Creating Custom Color (color spaces)

Color spaces is the framework for describing the color accurately/systematically.

1. Launch ArcMap and open \\Color_practice\lightness.mxd. This map document is a simple grid of 100 cells (most of which have no symbol). The orange cells are independent objects that can be moved around in the space. Cartographers often use lightness to represent amounts of something - light is less, dark is more.

2. Make sure that the map is displayed in the Data View and then click the Full Extent tool.

3. Using the Select Elements tool, click and drag the orange cells to the lower row. Arrange them from light to dark.

RESULT:

Lightness ramp, from light to dark.

4. Open\\Color_practice\saturation.mxd. Save the changes to lightness.mxd if you like. Saturation can also be used to represent quantitative data. Map readers, however, are less able to see numerous saturation steps.

5. Using the Select Elements tool, arrange the color cells on the lower row in order of saturation.

RESULT:

Saturation ramp, from desaturated to saturated.

6. Open\\Color_practice\two_dimensions.mxd. Save the changes to saturation.mxd if you wish. The view in this map is like that of a Munsell color slice, showing color space in two dimensions, lightness and saturation. In this next practice map you will arrange cells along both of these axes. I have positioned the corners for your reference. Arrange the color cells so that lightness varies vertically and saturation horizontally.

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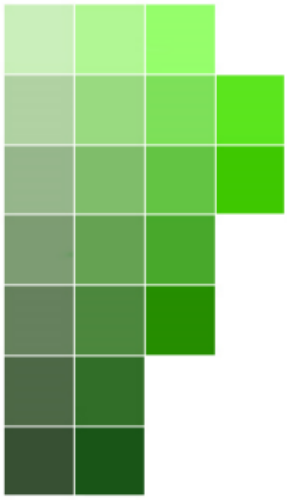
RESULT:

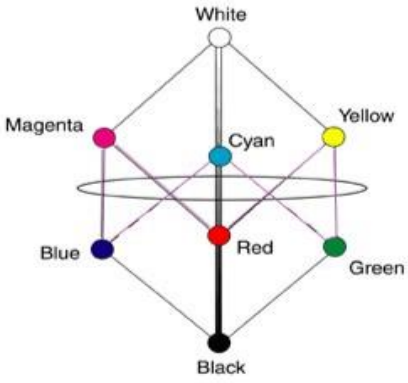


Variation in lightness and saturation.

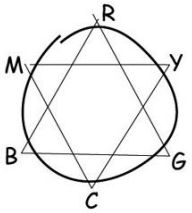
Mixing Colors in RGB and CMYK

For most projects, cartographers will mix colors in one of two common color spaces. RGB is used when the final product is intended for on-screen viewing. CMYK is used for printed documents. Remember from the concept gallery that these two color spaces can be represented as a cube. Further, the cube can be simplified to a circle that effectively shows the transitions between hues.

Color cube



Color Circle



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Notice that the primary hues from each color space end up being secondary hues in the other. For example, when mixing red and green in RGB space the result is yellow.

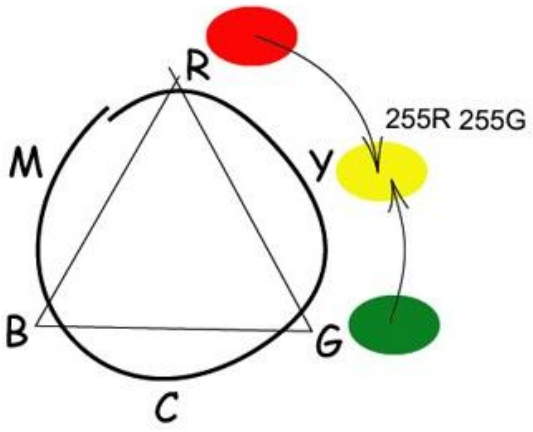

Fig: The often unexpected result of mixing Red and Green in RGB color space.

Note: Another important point to remember when mixing colors is how to control lightness. Recall from theory part that RGB space is additive, meaning that 100% of these three primaries together create white. CMYK space is subtractive, creating black. In practice, this means that to create a darker version of the yellow in the previous figure, you would mix smaller amounts of Red and Green - 200R 200G, for example. The reverse is true when mixing CMYK - more of the constituent hues will create a darker result.

Practice:

1. Open \\Color_practice\mix_cymk.mxd. You have five tasks to complete. Each layer in the Table of Contents corresponds with a row on the map. Each row has at least two cells precolored for reference.
2. Expand the layer called L1H (Lightness, 1 hue), and click on the symbol for data value 12. The object for this first row is to create a lightness sequence between the end cells.
3. In the Symbol Selector window that opens, click on the Fill Color: drop-down menu. Choose More Colors...
4. Click the drop down arrow found in the upper right corner of the Color Selector window and choose CMYK Sliders.
5. Use the sliders to mix a new color for this data value. You may want to first look at the CMYK values for cells 11 and 15 to get a sense of the range. You also may want to consult **http://colorbrewer2.org** for clues on how to move through a color space effectively (for sequential, qualitative and diverging schemes).
6. Repeat this process to mix colors for the other two gray cells in the row.
7. When ready, move on to the other rows on the map. Notice that instructions for a color sequence appear above each row.

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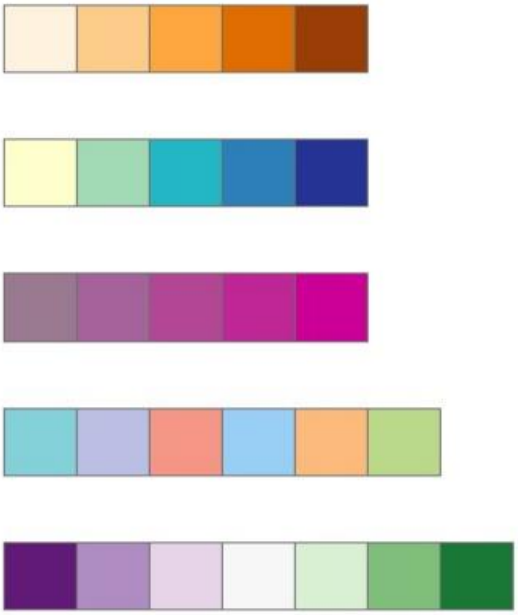
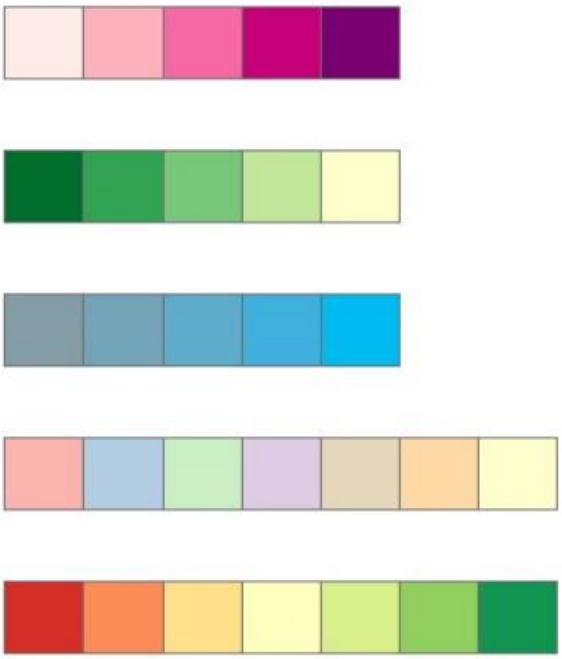
RESULT:



mix_cymk.mxd results.

8. Open \\Lesson3\practice\mix_rgb.mxd. Save the changes to mix_cymk.mxd if you wish.
9. This is the same process as before but this time mix your colors using the RGB Sliders.

RESULT:



mix_rgb.mxd results.

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