Hands on Color Combinate

For Color Combinate 0.1

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1 Introduction

This document explains some of the basics of Color Combinate – and color theory – from a user point of view.

It does not covers development with Color Combinate libraries, nor to use its Python bindings to build up applications or add Color Combinate to existing applications.

Most of the Color Theory section is taken from Wikipwedia as I've got low time to spare in this documentation, and the wording on Wikipedia's article about color theory looked to me both understandable and accurate.

Installation and/or building of Color Combinate is not covered by this article as it may vary among different systems.

2 Application's description

ColoCombinate is a simple application that have two primary uses: to help to create and save color harmonies and color schemes, and to view and edit color palettes.

It works by selecting a base color in the color selector (sec. 2.1) and a type of combination on the combination selector (sec. 2.2). Color combinations – harmonies – can have from one to four colors. Those are described on section 5.4.
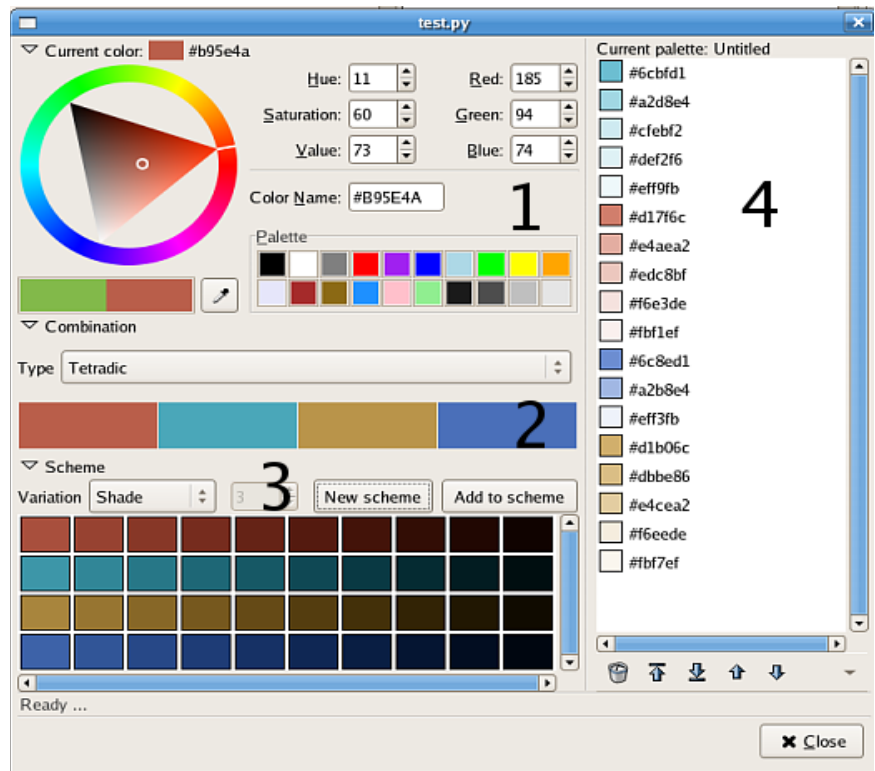

Illustration 1: Color Combinate user interface

Colors can be dragged and dropped from the scheme view, palette view and the color selector, and dragged from the combination selector. They can also be dropped in some other applications. Depending on the applications, it can be changed a color into it (such as by dragging on a Gimp's selection or on the Gnome Desktop) or written down as an hexadecimal string with the color's value (such as Gedit and most text editors).

2.1 Color selector

The color selector (Number 1 at Illustration 1 page 3) is located at the top left of the application. You can select a color by moving the wheel, and adjust the saturation and value by clicking into the triangle contained in the color wheel.

There are also individual fields for hue, saturation, value or red, green, blue and a small palette that is shared among GTK+ applications on some advanced uses.

2.2 Combination selector

The Combination selector (Number 2 at Illustration 1 page 3) allows you to choose among different color harmonies, such as Monochromatic, Analogous, Complementary, Split complementary, Triadic and Tetradic (see Chapter 5.4).

Your combination will be show just below the selector. Its colors can be dragged to other parts of the application (such as the palette), or to be used to create a color scheme by using different variations on lightness or saturation, or by adding shades (black) or tints (white).

2.3 Scheme (variation selector)

Once you choose a combination you can apply some variations to create a color scheme, some or all those color can be added to the palette to be saved.

The variation selector (Number 3 at Illustration 1 page 3) consists on a drop down menu to select the variation type to apply, a number entry with the amount of this variation – only enabled when selecting lightness or saturation – and a couple of buttons labeled "New Scheme" and "Add to Scheme".

Below those controls, there is a box where the resulting color scheme will be shown. It will show a variation of ten colors, per each color on your combination.

When clicking on "New Scheme" the contents of this view will be erased and the values of the new combination-variation pair will appear.

When clicking "Add to Scheme" the results from computing the current combination-variation pair will be added to the result of the previous computation.

2.4 Palette

The palette (Number 4 at Illustration 1 page 3) is a list of colors to save or load. You can drag colors there from any other part of the application, and edit its name on place.

At the palette's footer there are a set of buttons – which may be partially hidden – to reorder or delete colors on this palette.

There are also a set of buttons to save and load color palettes to/from disk, but those may be disabled by the caller when used embedded on third party applications, or by the user when called with an explicit command line switch ("-d" or "--dontsave").

The palettes are saved in Gimp's palette format. An example Gimp palette may be:

```
GIMP Palette
Name: Untitled
Columns: 10
#
106  63 160 Color name
160 105  63 #a0693f
152 119 194 #9878c3
194 151 119 #c39778
119 194 151 #78c397
193 172 220 #c1acdd
220 192 172 #ddc1ac
172 220 192 #acddc1
238 232 246 #efe9f7
246 238 232 #f7efe9
232 246 238 #e9f7ef
```

3 Creating a color combination

To create a Color Combination you should follow those easy steps:

• Select a base color in the color selector.

• Select a color combination.

• Adjust the color in the color selection to fit your needs – the combination color will be automatically updated.

• Select a variation and click on "New Scheme".

• You can drag the colors you'd like to the color palette.

• If you need more colors select another variation and click on "Add to Scheme". You can then pick up those colors to the palette.

• Save the palette if you wish so.

4 Using Color Combinate with other applications

In this section it will be noticed only how to use Color Combinate standalone application with other applications, but there are other possibilities for developers – see 4.5 page 7.

4.1 Command line

You can use Color Combinate for any application that will let you spawn a command line process.

Most development editors will allow you to do so, usually under the name of "External tools".

How to use it depends on the host application. As example using MonoDevelop, you may add it the preferences, "Tools – External Tools" section.

You can use those switches from the command line:

- "-c" or "--collapsed" : show the controls collapsed (palette view mode).

- "-f" or "--file" : open a palette file.

- "-d" or "--dontsave" : hide the "Save/Open" button.

An example invocation to show Color Combinate in view mode, with a palette loaded may be:

```
colorcombinate -c -f /path/to/palette.gpl
```

4.2 Saving and loading palettes

You can use also the resulting color palettes on other applications as The Gimp or Inkscape.

4.2.1 Gimp palettes

Color Combinate palettes are in Gimp format so they can be used with The Gimp. To use those palettes on the Gimp, save them in The Gimp user's directory.

Usually it's located on you home directory – C:\Documents and Settings\username on Windows 2000 or greater, and /home/username on Linux, mac OsX and Unix – and it's called ".gimp-X.X" being "X.X" the version on The Gimp – as example in my Linux system it's located on "/home/iago/.gimp-2.2".

Onto the Gimp directory there is a directory called "palettes" where you should save your palettes to be used by The Gimp.

To open those palettes from the Gimp – as for Gimp-2.2 – use the "File/Dialogs/Palettes" menu.

4.2.2 Inkscape palette

As in the paragraph above, Inkscape uses the same scheme and also Gimp palette format.

You can store palettes to use in Inkscape on your home directory ".inkscape/palettes".

To open the palettes from Inkscape – as for Inkscape-0.43 – use the "Object/Swatches" menu.

4.3 Drag and drop

To use Color Combinate independently you can use its drag and drop capabilities to work together other applications.

You only must to try it out with your preferred application to see if it works because this depends on the application's drag and drop support.

Some applications – as The Gimp – will use the resulting color, others will paste the color in hexadecimal RGB format – most text editors.
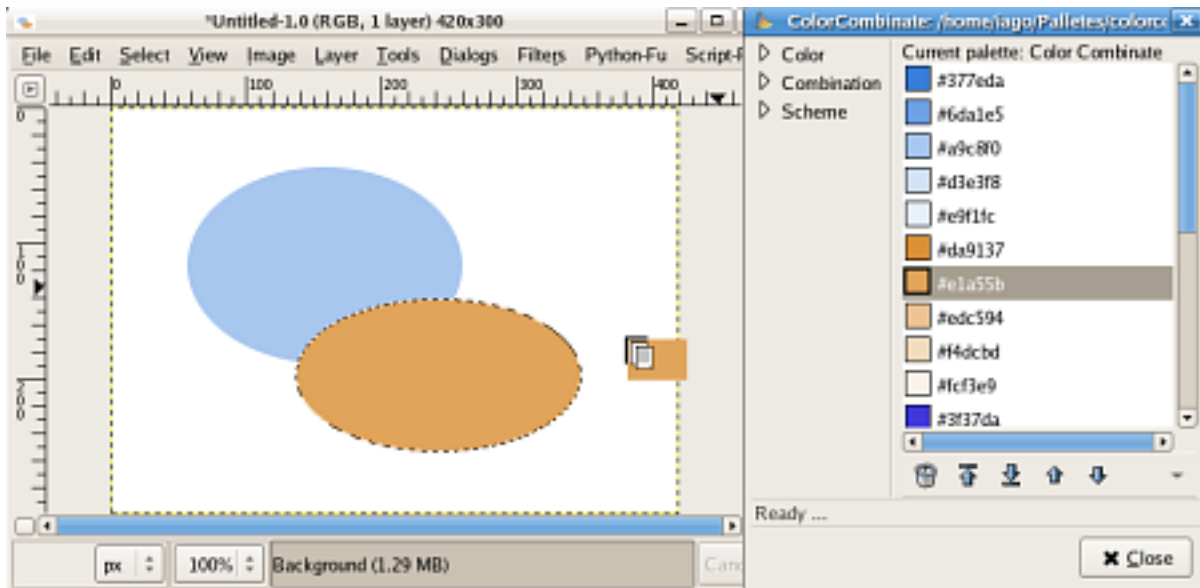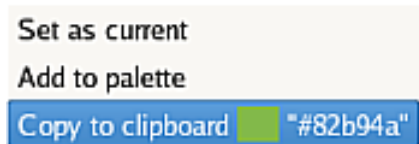

Illustration 2: Drag and drop with the Gimp

4.4 Copy and paste

You can easily as well, use copy and paste by using the right button of your mousse over a given color.

It will copy an hexadecimal color string to the clipboard in the form #RRGGBB.

4.5 For developers

There are other means for developers to use Color Combinate as a GtkWidget or as a Python Gtk object. Mail me – see Chapter 6 – to get more information about this if you need to embed a Color Combinate dialog in your GTK or PyGtk application.

5 Color Theory 101[1]

Color Theory is a set of principles used to create harmonious color combinations. Color relationships can be visually represented with a color wheel — the color spectrum wrapped onto a circle.

5.1 Historic Background

The first color wheel was invented by Sir Isaac Newton. He split white sunlight into red, orange, yellow, green, cyan, and blue beams; then he joined the two ends of the color spectrum together to show the natural progression of colors. Newton associated each color with a note of a musical scale.

Illustration 3:
Newton's color wheel

A century after Newton, Johann Wolfgang Goethe began studying psychological effect of colors. He noticed that blue gives a feeling of coolness and yellow has a warming effect. Goethe created a color wheel showing the psychological effect of each color. He divided all the colors into two groups – the plus side (from red through orange to yellow) and the minus side (from green through violet to blue). Colors of the plus side produce excitement and cheerfulness. Colors of the minus side are associated with weakness and unsettled feelings.

Illustration 4: Goethe minus side.

Illustration 5: Goethe plus side.

The current form of color theory was developed by Johannes Itten, a Swiss color and art theorist who was teaching at the School of Applied Arts in Weimar, Germany. This school is also known as 'Bauhaus'. Johannes Itten developed 'color chords' and modified the color wheel. Itten's color wheel is based on red, yellow, and blue colors as the primary triad and includes

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1 Color theory. (2006, August 11). In *Wikipedia, The Free Encyclopedia*. Retrieved 18:15, August 20, 2006, from
http://en.wikipedia.org/w/index.php?title=Color_theory&oldid=69052390

twelve hues.

5.2 Color wheel

Illustration 6: The visual color wheel

According to color theory, harmonious color combinations use any two colors opposite each other on the color wheel, any three colors equally spaced around the color wheel forming a triangle, or any four colors forming a rectangle (actually, two pairs of colors opposite each other). The harmonious color combinations are called 'color harmonies'. Color harmonies remain "harmonious" regardless of the rotation angle.

5.3 Painter's vs Visual color wheel

There are difference in the resulting color harmonies when using different color wheels. The harmony itself – the location of the colors in the color wheel – remains the same despite of the hue used.

Painter's color wheels are those that use color mixtures based on available color for painting. Visual color wheel are those that used the mix of visible light to build up its colors.

Color Combinate uses the visual color wheel, and it's then more suited for computer works than for painting.

5.4 Color harmonies

5.4.1 Monochromatic

The monochromatic color scheme uses variations in lightness and saturation of a single color. This scheme looks clean and elegant. Monochromatic colors go well together, producing a soothing effect. The monochromatic scheme is very easy on the eyes, especially with blue or green hues.

Illustration 7:
monochromatic example

5.4.2 Analogous

The analogous color scheme uses colors that are adjacent to each other on the color wheel. One color is used as a dominant color while others are used to enrich the scheme. The analogous scheme is similar to the monochromatic, but offers more nuances.

Illustration 8: analogous
example

5.4.3 Complementary

The complementary color scheme consists of two colors that are opposite each other on the color wheel. This scheme looks best when you place a warm color against a cool color, for example, red versus green-blue. This scheme is intrinsically high-contrast.

Illustration 9:
complementary example

5.4.4 Split Complementary

The split complementary scheme is a variation of the standard complementary scheme. It uses a color and the two colors adjacent to its complementary. This provides high contrast without the strong tension of the complementary scheme.

Illustration 10: split
complementary example

5.4.5 Triadic

The triadic color scheme uses three colors equally spaced around the color wheel. This scheme is popular among artists because it offers strong visual contrast while retaining harmony and color richness. The triadic

scheme is not as contrasting as the complementary scheme, but it looks more balanced and harmonious.

Illustration 11: triadic example

5.4.6 Tetradic

The tetradic (double complementary) scheme is the most varied because it uses two complementary color pairs. This scheme is hard to harmonize; if all four hues are used in equal amounts, the scheme may look unbalanced, so you should choose a color to be dominant or subdue the colors.
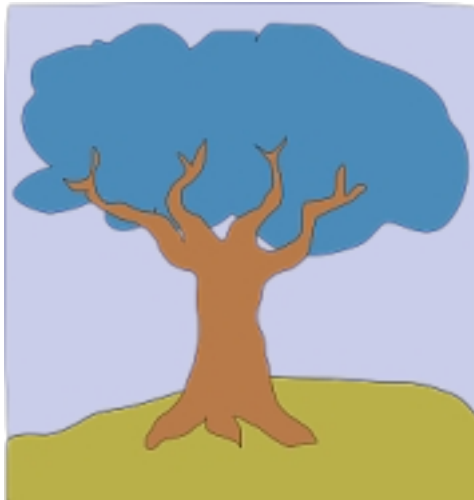
Illustration 12: Example combination based on tetradic

5.5 Schemes

Color theory does not analyze tints, shades, and tones.

Color theory analyzes only the relationships of pure colors; it does not take color lightness and saturation into account. While your color scheme can use any tints, shades, and tones, color theory pays attention only to the hue component.

5.5.1 Hue

The name of a color. Technically, a hue is defined by the dominant wave length of light reflected by an object. Many colors are created by adding black (shade), white (tint) or gray (saturate) to any given hue.

5.5.2 Lightness

The lightness or darkness of hue. Judging a color's lightness is based on the amount of light a hue reflects. High value colors reflect a lot of white (without changing its hue). The average eye can distinguish about 40 variations of a color's value.

5.5.3 Saturation

Saturation describes the purity of a color or its intensity. A hue in its purest form is at maximum chroma. The more gray a hue contains, the weaker its chroma.

The tone is a fully-saturated hue plus a value of gray. Tones are often referred to as low intensity or grayed colors.

5.5.4 Tint.

A saturated color plus white. Pastel colors are examples of tints.

In normal usage any color mixed with white.

5.5.5 Shade

A mixture of a fully-saturated hue with black.

In normal usage any color mixed with black.

6 Author and Contact

Color Combinate have been developed by Iago Rubio.

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