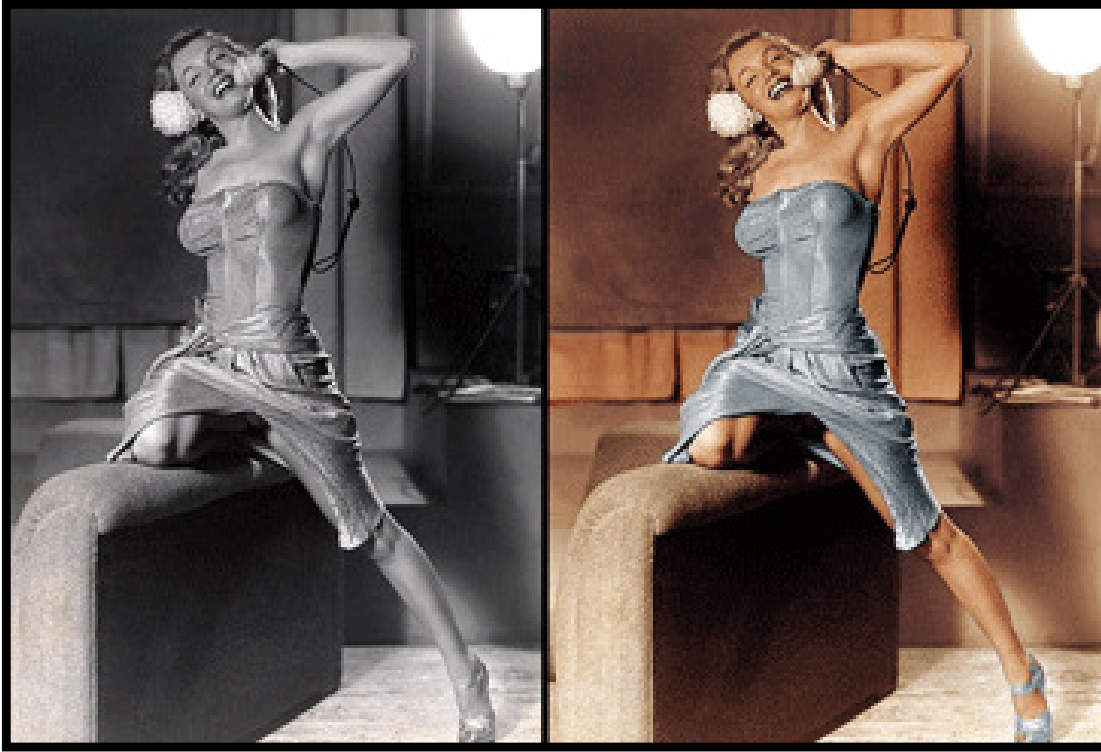




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<http://www.ict-id.nl/wisbin/v2.0/html/portfolio/pixels/MM.html>

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“Colorizing” Photographs using GIMP

Color Manipulation

There are many types of color-altering editing styles and techniques.

We can add color, we can remove color, we can alter and stylize color.



Adding/removing color is not new...

The general colorization concept and techniques probably go back over a hundred years, and include using color pencils and crayons on black and white prints.

Some grayscale film from NASA's Apollo missions had color added.

The video for a-ha's song "Take on Me" used frame-by-frame rotoscoping to convert video to comic book style drawings.

<http://www.youtube.com/watch?v=djV11Xbc914&ob=av3e>



...more recently...

It has become possible to use computer-assisted and even semi-automated tools with good results.

Two somewhat recent examples that tie a bit more closely to our topic today would be those of “Pleasantville” and “Sin City”.



“Fake” Colorization

If you have a color image, you can create a selectively-colored image with a little patience.

- Load the original image into GIMP.
- Go to **Layer** menu and select **Duplicate Layer**.
- In the layers window, select the duplicated layer and then go to the **Colors** menu, and then select **Desaturate**.
 - Note: This is just one way to convert an image to grayscale.
- Finally, erase (using either an eraser directly or by adding a layer mask and modifying that) the parts of the grayscale image that you want to appear in color (erasing will reveal the color image is below this layer).

Public domain image:

http://pdphoto.org/jons/pictures3/rose_1_bg_042003.jpg



Colormap Rotation

If you have added a single color to a black and white image using the layer-erasing technique but you don't like the color in the original image you can alter the color.

Go to the **Colors** menu, to the **Map** sub-menu from there, then select **Rotate Colors...**

- Change the selected wedge in the **From** color wheel to contain just the color in the original image.
- Change the selected wedge in the **To** color wheel to contain the color with which you want to replace the original color.



“Real” Colorization: Preparing Image

If our original image is black and white, we can not use the “cheap” way of colorizing parts of it.

An image that has some tones within it (eg: sepia) can be converted to true grayscale (for example, by again going to the **Layers** menu, the **Colors** sub-menu, and selecting **Desaturate**).

To start the colorization process, you will want to open the original image in GIMP, and then if it was stored in a grayscale format set the **Image-Mode** to **RGB**.

“Real” Colorization: Choosing a Color

You will need to select a color (or color range) to apply to the image.

A common technique for color selection is to find a picture that has a desired color and sample from it to get the color code.

To do this:

- Open the image in GIMP.
- Select the color picker tool.
- Click on a spot in the image.

The RGB values for the color will be presented in decimal numbers (between 0 and 255) and also as the 6 hexadecimal digit color code.

“Real” Colorization: Adding the Color

For each color you want to add, you will create a duplicate of the base layer and then modify it and/or blend it with the other layers.

There are many different ways to add color. We will look at three:

- Adding a layer on which you paint a color and then blend it into the original image.
- Using a color image with mostly skin tones as a sample from which to create a gradient map.
- Creating a gradient layer based on two color endpoints and the grayscale image.

Paint and Blend

Create a blank layer (fill with **Transparency**).

Double-click the color palette's foreground color and enter your chosen color.

Use the paint brush and paint over the part of the image to which you want to apply the color.

Go to the **Layers, Channels, etc.** window and change the layer's **Mode** to **Overlay**.

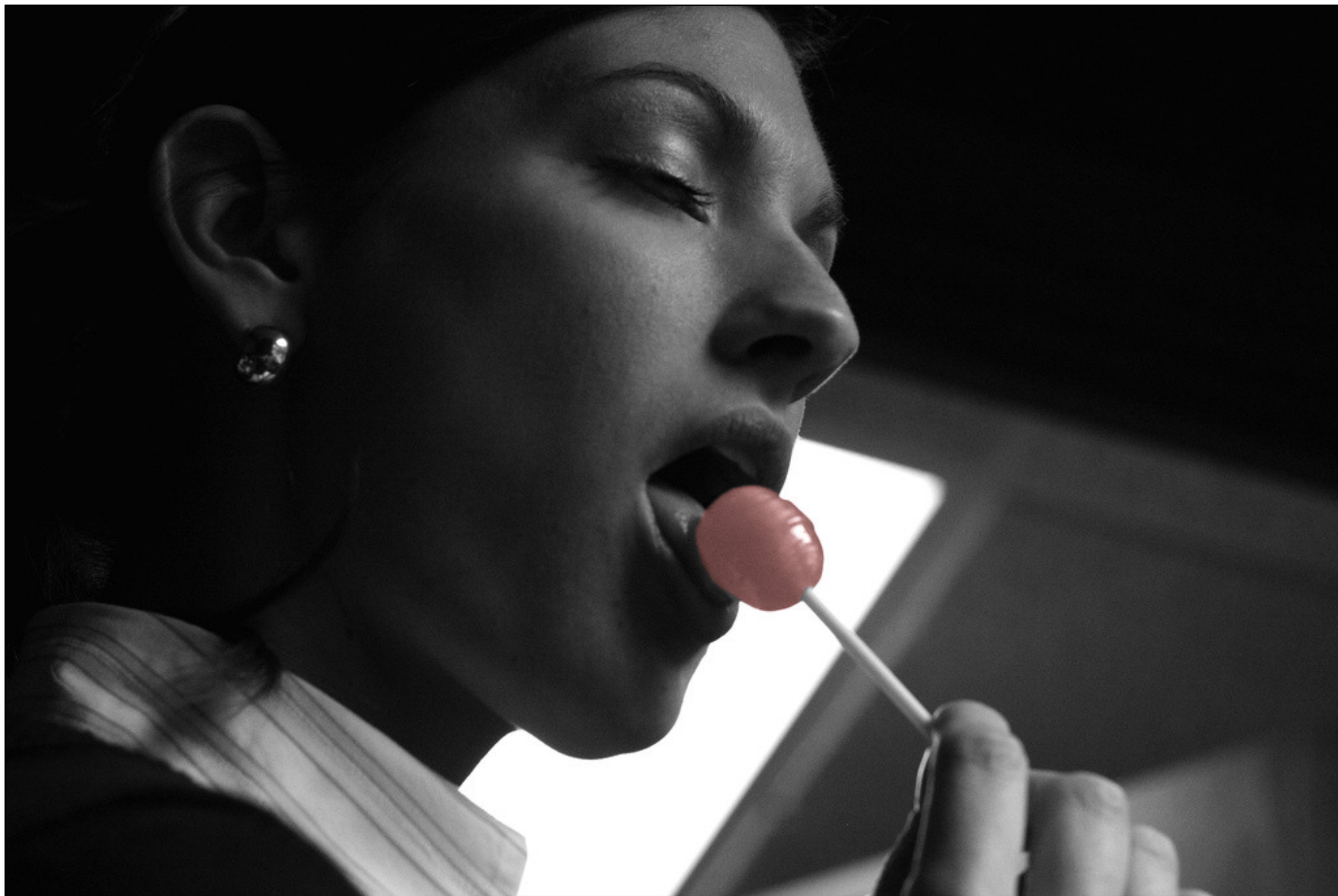
Paint and Blend: Example

Let's take an image from Flickr that says we are allowed to modify it and add some color to it...



Let's make the candy the color #DD7E7A





Sample Colorize: Concept

In a grayscale image, we are basically just looking at light intensity (no hue).

When we have a grayscale image, we are limited to 256 “colors” – gray can be created as a color code by mixing an equal amount of red, green, and blue.

We could add color to an image by assigning a 24-bit color to each luminosity level – this is essentially what GIMP’s “Sample Colorize” does.

- We provide an image whose primary colors we’d like to use on our image.
- Colors are assigned to each luminosity level based on the sample image.
- Our image is colorized based on these assignments.

Sample Colorize: Usage

Create a duplicate of the base layer and edit that layer.

Open the image whose general color range you want to use in colorizing this new layer.

Go to the **Colors** sub-menu, then the **Map** sub-menu under that, and then **Sample Colorize...**

- Make sure the current layer is set as the destination.
- Select the image whose color scheme you want to sample.
- Click **Get sample colors**, adjust the **Output levels** if needed, then **Apply**, then **Close**.

Go to the **Layer** menu, the **Mask** sub-menu, and select **Add Layer Mask** and choose **Full Transparency**.

The colorized layer will “disappear” and you can now “paint” by *erasing* from the mask.

Sample Colorize: Example

Let's take another image from Flickr that says we are allowed to modify it and decided to add some skin color to it...



Next, let's find an image with some interesting skin tone quantities...



© 2005 Danny Otares

Gradient Map

Create a duplicate of the base layer and select that layer.

Double-click the color palette's foreground and background colors and enter darker versions of the color bracketing the general color you want to use.

Click on the **Blend Tool** icon in the main window, then in the **Layers, Channels, Patterns, etc.** window go to the **Gradient** tab and select **FG to BG (RGB)**.

Go to the **Colors** sub-menu, the **Map** sub-menu under that, and then **Gradient Map**.

Go to the **Layer** menu, the **Mask** sub-menu, and select **Add Layer Mask** and choose **Full Transparency** so you can again “paint” by erasing from the mask.

Finally, set the layer's **Mode** to **Overlay**.

Gradient Map: Example

By using a gradient map from color #2222BA to color #9B9BBA we can get a soft, rich purple texture.



Alien Girl

Of course, if we had selected a picture of a green alien as our color source in the first step...



...we'd have gotten something a bit different...

Semi-automated Colorization

An algorithm was developed that would allow the user to automate the colorization process:

- <http://www.cs.huji.ac.il/~yweiss/Colorization/>



Some resources:

<http://en.wikipedia.org/wiki/Rotoscope>

<http://www.gimpguru.org/Tutorials/Color2BW/>

<http://graphicssoft.about.com/od/photoshop/l/blps508c.htm>

<http://www.gimpguru.org/Tutorials/>

<http://docs.gimp.org/en/plugin-sample-colorize.html>