

# Layer Blend Modes

What they are and what they do

“The eye should learn to listen  
before it looks.”

- Robert Frank

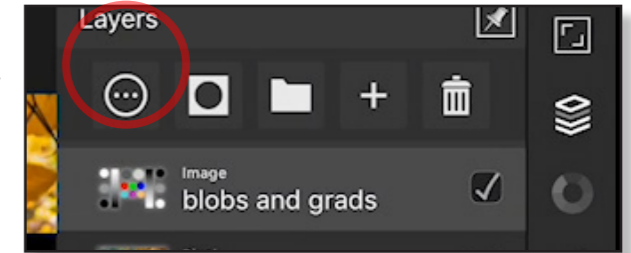


This is the picture I'll be using for this section, but I used the place command to add another file as a layer on top so I get something that looks like this:



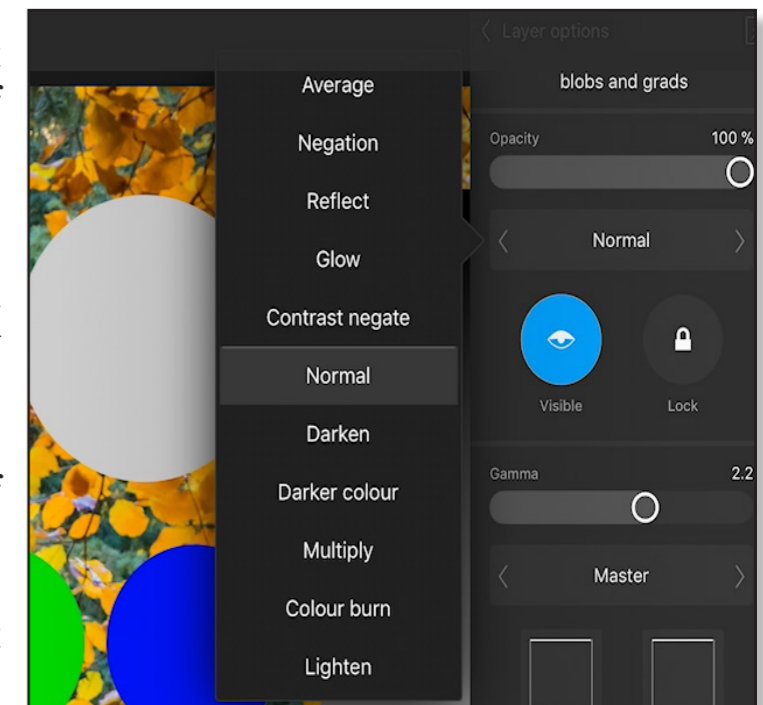
I have a couple of black to white gradients with some circles. The circles at the sides of the image are black, mid gray and white. The circles in the middle are darkish and lightish gray at the top. Under that we have the three primary colors red, green and blue, plus 3 circles underneath which are just three random colors. I've called the file *BlendModesT-woLayers* and it's available for you to download.

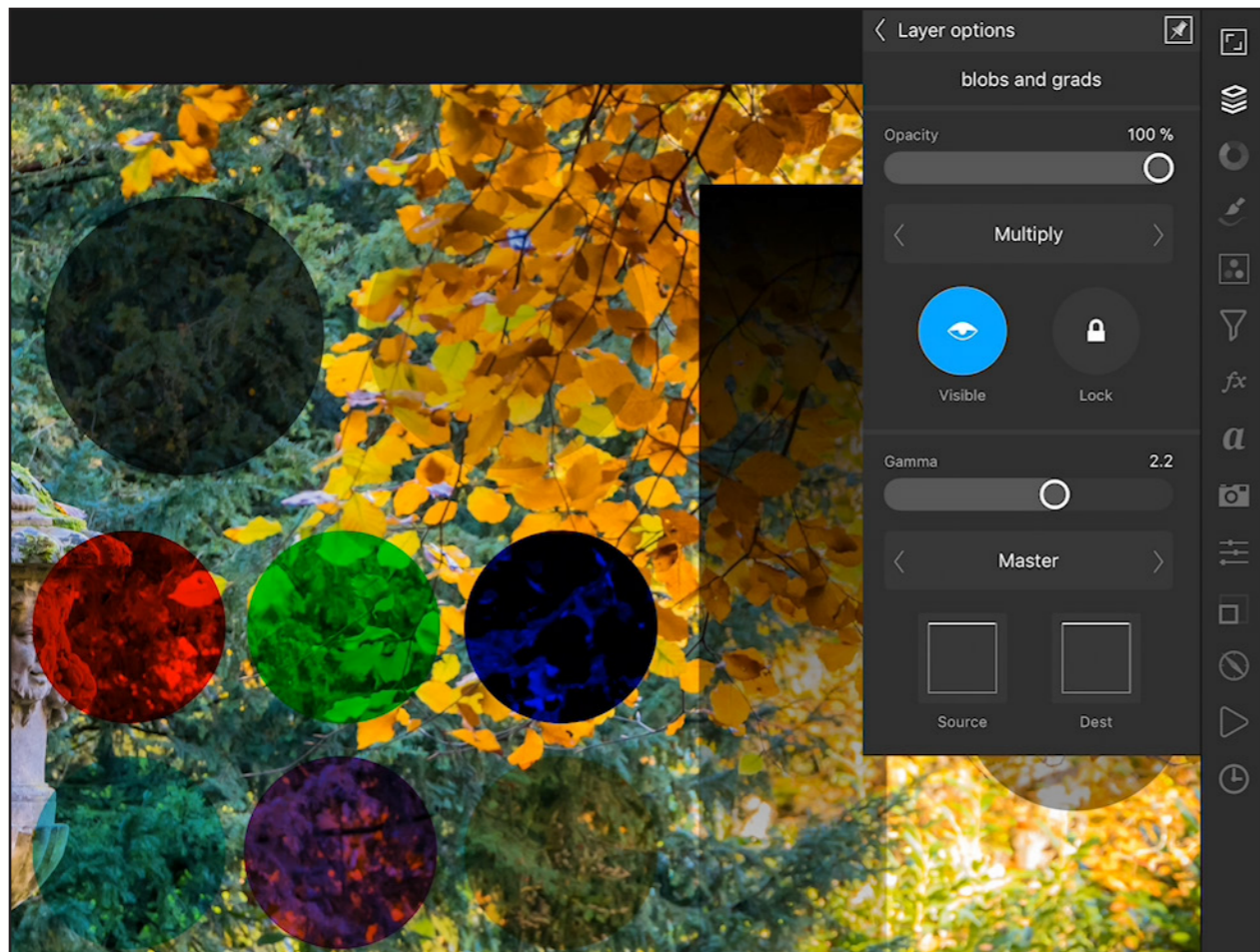
The top layer is what we're interested in. Make sure it's selected, then if you open up the Layers Studio and then click on the options icon, circled in red:



You get the Layer Options Panel. If you tap where it says **Normal** you get a list of all the layer blend modes Affinity Photo has to offer. Oh yes! Loads of them, all with enticing names and no idea what they do. But let's try one out.

If you look down the list of blend modes you can see one called **Multiply**. Tap on it to select it and watch what happens to your picture.





The layer is behaving differently. Instead of being a series of mainly black, white and grey circles you have the underlying layer with all the leaves showing through as darker leaves. The two layers aren't permanently affected - if you go back and select normal mode you can see that's the case (drum roll) Laydees and Gen'lemen, welcome to the world of Layer Blend Modes!

This is where you start tapping into the real power of Photo editing programs and once you make the effort to get to know them you will have figured out the foundations of most of the fancy effects you see in modern photography. And they are pretty easy because they are divided up into groups, namely Darken, Lighten, Contrast, Inversion and Subtraction and Component. In addition the last group is Affinity-specific blend modes that Photoshop users don't have, so you can be Sir Smug of the Smuggoes about that if you like.

Here are 5 things you'll want to know about layer modes:

1. Any and every layer is always in one of the layer modes - by default that's normal.
2. They usually work by changing the look of the layer that's below them, but they don't permanently alter the layer below them. They actually work with the luminance, or brightness, values of the layers, convert them into a value between 0 which is black and 1 which is white, & then do mathematical operations on the two values.
3. They can be changed at any time to a different layer mode - they aren't fixed in stone.
4. Any new layer starts out at 100% opacity - that's not fixed in stone either. You can and will change that very often.
5. They are divided up into logical groups.

So let's start with the last point; groups. They are divided up into groups that are clumped together from the pull down menu. You have Normal at the top. The next few modes make the layer underneath darker in different ways. Under that you have their opposites. These modes make the layer under them lighter. Under that you have the contrasty layers - they make the dark things darker and the light things lighter.

Under that you have the inversion and subtraction/cancellation group which you don't really use that much, & then you have the component group which you do sometimes use. Finally there's the Affinity specific blend modes which do weird and wonderful things. Yes; I know, there's a lot of them but the good news is that 95% of the time you only use about 7 for regular photo editing duties: Normal, Multiply, Screen, Overlay and Soft Light, and down the bottom you use Color & Luminosity.

So what I'll do is take a screen shot of the same file with the top layer set to the different blend modes along with a brief description of what the blend mode is doing. I'll go through them in the order they appear in the mobile version of Affinity Photo.

We've already seen Normal on the first page so I'll start with the next one down which is Darken...



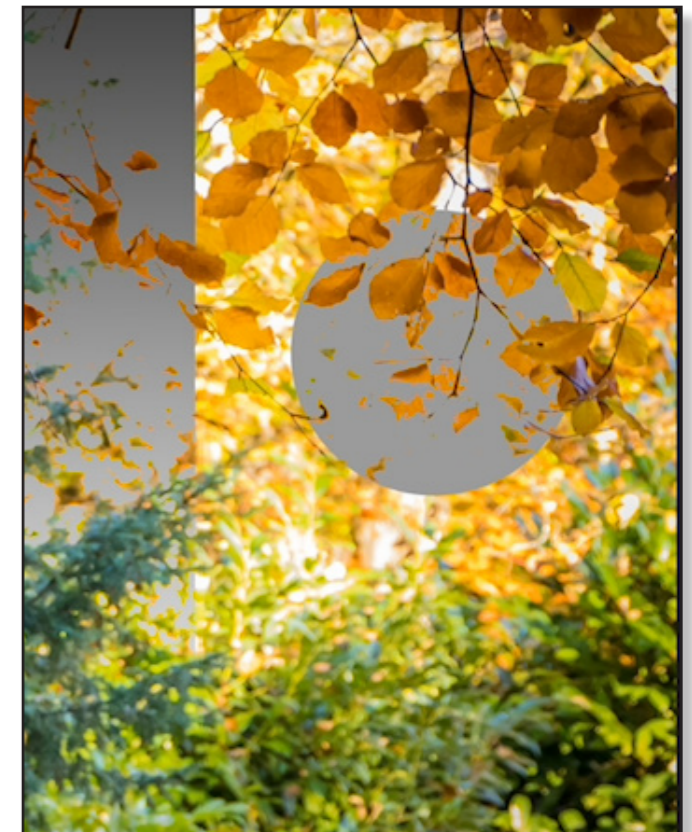
**Darken** - darkens the image in a less saturated and less pleasing way than multiply. It kind of kills the colors.

One thing I should say is that the two mid gray circles to the left and right of the image are just that; 50% grey. Exactly halfway bright. So I'll refer to them as the mid gray blobs because they will be important when it comes to explaining a few things later.



**Darker Color** - what happens is that Affinity Photo will look at both layers, pixel by pixel & decide which one has the darkest pixel. Whichever is the darkest, that's what'll get shown.

For example, take a look at this close up of the rightmost gray square. Most of the underlying layer is light coming through leaves, so the top layer with the gray gets shown. But some of the leaves are darker than that mid gray circle and so they get shown instead.





**Multiply** - This is what we use most often when we want to make things darker. White is invisible, black is opaque & the grey is making things darker. The darker the grey the darker the colour. What you don't get is a washed out gray with the white showing through which you would get in normal mode and you lowered the opacity.



**Color Burn** - It's different to multiply in that as the greys get darker you get darker & more intense colours until you get to black.

That's it for the darken channels. They are all just variations on the same theme - make things darker.

Next up is the lighten modes. There's one more than the darken modes, five as opposed to four. But there is a case for saying that a later layer blend mode, Subtract, is also a darken mode.

Each of the darken blend modes has a counterpart in the lighten modes and I'll mention that in the next few screen shots.



**Lighten** - Multiply makes things generally darker & the light bits get more transparent. Lighten makes things generally lighter and the dark bits get more transparent. It does the opposite to Multiply.



**Lighter Color** - shows the lightest pixel out of the two layers, as opposed to Darker Color which does the opposite.



**Screen** - This tends to be a good choice when it comes to lightening parts of your image. You can see it gently lightens without becoming too over or under saturated. Eventually though it will reduce the saturation of the colors and give a slightly faded look.



**Color Dodge** - Color Burn gives more intense darker colors than multiply mode. Color Dodge does the exact opposite. It lightens and gives brighter more intense light colors than, say, Lighten mode. It blows out highlights a bit more enthusiastically than Screen mode.



**Add** - This blend mode simply add the brightness value of the pixel underneath to the top one and displays the result. As you can see things get bright pretty quickly. It's a bit like halfway in between Screen and Color Dodge.

So that's the darken and lighten modes & so far pretty easy. Now on to the contrast blend modes. If you understood the lighten and darken modes you already know the contrast modes because all they are is a combination of the lighten and darken modes. They all basically do the same thing which is to lighten the lighter pixels, darken the darker pixels, and throw out the middling ones.

They all check the colours against medium gray. In our picture that's the 50% gray blob. If a colour is darker it'll apply one of the blending modes we've already seen - darken, multiply & so on. If it's lighter we'll get screen, lighten & so on. Remember how each of the modes had it's counterpart? That's what usually gets applied. For example; Overlay is a mix of half strength Screen and half strength Multiply & the mid tones become transparent.



**Overlay** - as already said, a mix of half strength Screen and half strength Multiply & the mid tones become transparent. This gets used a lot, as does the Soft Light and Hard Light modes.

Notice how the mid gray blobs have disappeared? In the contrast modes, anything that is a mid gray will be completely invisible. That's why things like the High Pass filter work. They create a layer that is mostly mid gray & therefore invisible. But edges get rendered out as darker and lighter. So setting the high pass layer to a contrast blend mode makes the edges darker and lighter which is how you get the sharpening effect but doesn't affect the non-edges of the image.





**Soft Light** - does the same thing as the overlay blend mode but gives back a more gentle effect, say about 50% of the intensity of overlay and it reduces contrast.



**Hard Light** - the hyperactive sibling of Soft Light. It combines Screen and Multiply modes for a rather intense effect.



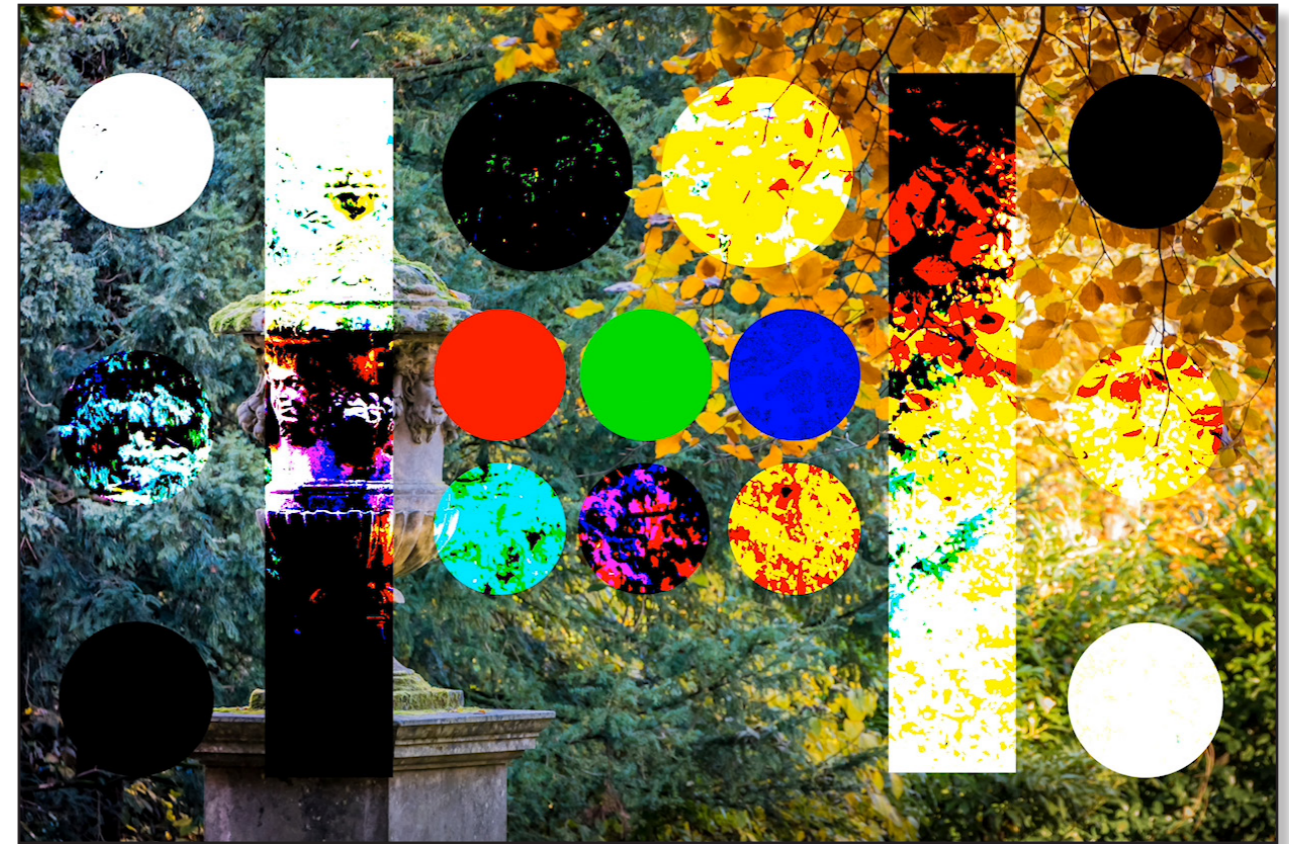
**Vivid Light** - is a mix of Dodge & Burn. It's a more intense and saturated contrast mode and can add more saturation to unsaturated images.



**Pin Light** - is a mix of full strength Lighten & Darken blend modes. It's very extreme & results in patches & blotches and a whole heap of noise. It completely removes all mid tones.



**Linear Light** - looks like a mix of add and subtract modes. Again, it's quite an extreme effect, more contrasty than Vivid Light but not as saturated.



**Hard Mix** - You end up with the image containing up to 8 colours - Red, Green, Blue Cyan, Magenta, Yellow, Black & White - all the primaries, all the secondaries & black & white. But if you lower the opacity you start getting more colours - that's when it starts getting useful, although still rather suited for specific purposes like getting solarization effects rather than being used all the time.

Then you have the inversion and subtraction groups - Difference, Exclusion, Subtract & Divide which are a bit obscure and used for specialized purposes.

You only really use the inversion groups, Difference or Exclusion, when you are comparing 2 photos to see if they are the same or for some rather obscure effects.



**Difference** - Two identical images placed directly on top of each other will appear black. Every pixel you see is a result of the top pixel being subtracted from the bottom or vice versa. Any minus sign is discarded, leaving just the result.



**Exclusion** - Similar to Difference but with less contrast.



**Subtract** - This just subtracts the top layer color from the underlying layer color. I'm not sure why it isn't included in the darkened layer blend modes group. Gets pretty dark and intense pretty fast, doesn't it?

So on to the component group. To understand these it helps to know what Hue, Light and Saturation are. Hue is your basic colour like red, green & so on. Think of the colors of the rainbow. All of them, not just the 6 or 7 or 5 that we were told were there when we were young. Affinity Photo can churn out 360 variations of hue.

Luminosity takes your basic Hue and affects how light or dark it is, so you can have almost black with a smudge or red, getting lighter to what people call a standard red & still lighter through deep pink, pale pink up to white.

Saturation is how intense that red is, going from saturated, intense red & getting gradually duller, eventually becoming gray. Now think of hue, saturation and luminosity as being 3 separate components. The component blend modes combine the different components in different ways.



**Hue** - Gives you the luminance and saturation from the lower layer with the hues of the top layer.



**Saturation** - Keeps the color intensity of the selected layer with the luminance and hue from the layers underneath. So when the active, or blend layer has an intense colour it'll show up with the brightness and hue from the layers under it. And if the top layer has only grays, it'll desaturate the underlying layer.



**Luminosity** - Keeps the luminance of the selected layer and gives it the hue and saturation of the layers below. So in other words the colours of the layers below replace the colours of the layer with Luminosity color mode.



**Color** - keeps the hue and saturation of the selected layer, and gives it the brightness of the layers under it. It tends to be stronger than the Hue blend mode because it has the saturation of the top layer. This is the prime layer blend mode to use for recoloring black and white images.

Finally we have the blend modes that aren't in Photoshop. Many other image editing programs have all of the above modes - because Photoshop does so they've become an industry standard. But Serif have given us a few more...



**Average** - an average between the image and the composite layer. It's like setting the blend layer's opacity to 50% on normal mode. It can be used to moderate extreme effects.



**Negation** - like Difference but it's additive, so the results of pixels being added together instead of subtracted are shown. It brightens instead of darkens.

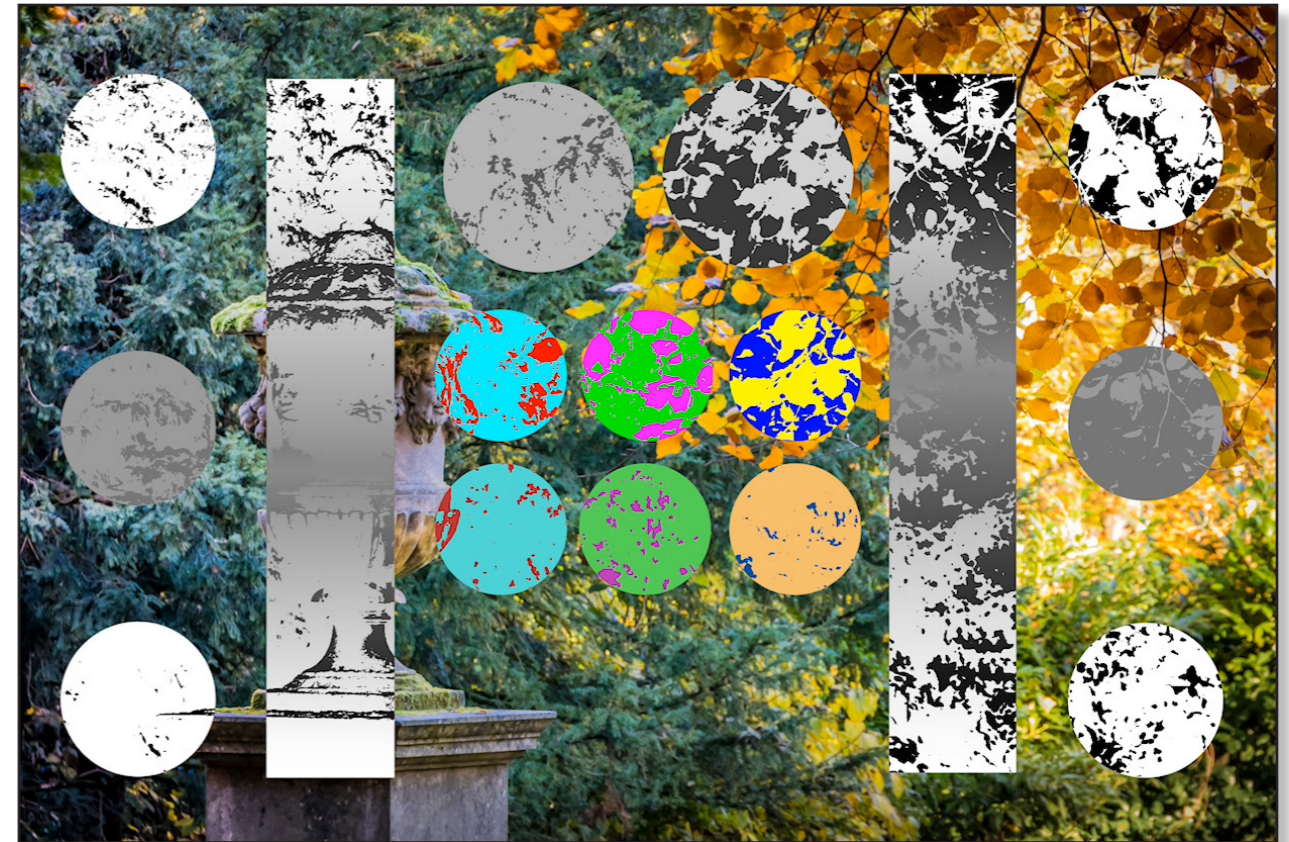


**Reflect** - darkens the image using values from the blend layer. You can use it to enhance parts of an image like reflections, rough textures or areas of light.





**Glow** - does the same as Reflect but swaps the layer order, so it brightens the image using values from the blend layer. Great for widening the radius of artificial lighting and making it more intense. Also good when painting fantasy beasts to quickly build up a glow around whatever bits of fantasy beasts glow.



**Contrast Negate** - This one seems to have everyone stumped! It seems to invert the pixel values of the composite layer based on the image layer's content. That's an opinion I've come across from two sources...

Looking at it, it seems to be a hybrid of the lighter color and darker color blend modes with inverted colors. Look at the color circles, especially the top 3 red, green and blue primary colors. It seems like any pixel below that's darker than 50% bright means the hue of the top pixels is displayed. Any underlying pixel that's lighter than 50% bright means the complementary (opposite) hue gets displayed and the luminance and saturation values of the lower layer don't count for anything. At least, that's what it looks like to me.

I should point out that the desktop version of Affinity photo has layer blend modes like the erase blend mode which takes the transparency of the blend layer and applies it to the base layer as a kind of a mask. The blend layer creates holes in the layer under it. Maybe the reason it's not in the current release of Affinity Photo on tablet is a technical difficulty and maybe we'll see it in a future release.

## Summary

- Any and every layer is always in one of the layer modes - by default that's normal.
- They usually work by changing the look of the layer that's below them, but they don't permanently alter the layer below them.
- Blend modes can be changed at any time to a different layer mode - they aren't fixed in stone.
- Any new layer starts out at 100% opacity - that's not fixed in stone either. You can and will change that very often.
- They are divided up into logical groups - lighten, darken, contrast, inversion, subtraction, component and Affinity specific.
- 95% of the time you only use about 7 for regular photo editing duties: Normal, Multiply, Screen, Overlay and Soft Light, and down the bottom you use Color & Luminosity.