1

CS 2033

Multimedia & Communications II

LECTURE 3 – ADVANCED PHOTOSHOP

Announcements

2

- Assignment 1 is posted on OWL and it is due Jan. 31.
  - There's a lot to do so it's best to start on it now and do what you can.
  - There are a couple small parts that are in Lab 3. They are shown in lecture, so you can still do them even before Lab 3 next week.
  - Follow the instructions carefully!

Announcements

3

- Quiz 1 will be open Feb. 5-6th.
- You can refer to the lecture notes and your notes during the quiz.
- You can even use Google if you want.
- The questions will involve thinking outside the box.

Colour channels

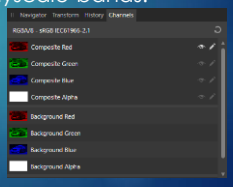
4

- Recall that graphics on computers use the RGB colour model.
- In printing, the CMYK model is used.
- Colour models are made up of channels or bands.
- RGB: 3 bands x 8 bits = 24 bits/pixel.
- CMYK: 4 bands x 8 bits = 32 bits/pixel.

Colour channels

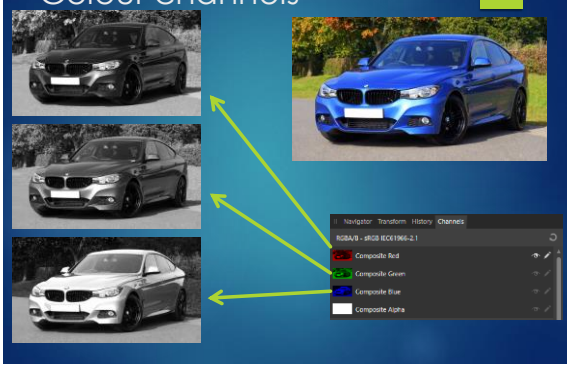
5

- Each individual band is an 8-bit grayscale image.
- A colour image is a composite, made of several grayscale bands.
- In Affinity Photo, you can see the individual channels by clicking on the Channels tab.



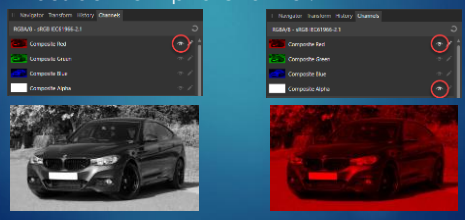
Colour channels

6



Colour channels 7

- You can also see these channels in colour by clicking the eye icon beside the Alpha channel.



Colour channels 8

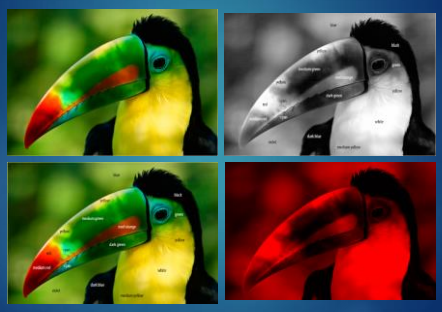
Colour channels 9

- Affinity Photo sees images in terms of the grayscale channels. They cannot see colour the way we can.
- What do the gray values represent, and how does that translate to a colour composite for us to see?

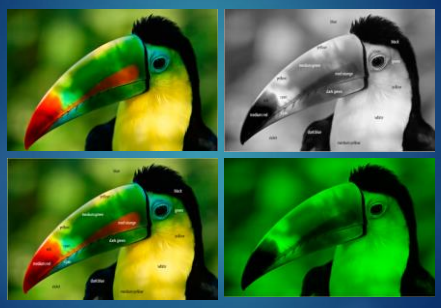
Colour channels 10

- Think of it as a measurement of how much of the colour (R, G, or B) is present in that region of the fully coloured picture.
  - White: full colour from channel
  - Black: no colour from channel
  - Gray: some colour from channel

Colour channels 11



Colour channels 12



Colour channels 13

Colour channels 14

- Why is the blue channel so dark?
- Look at the original picture. Are there many blues (including purples and cyans) in there?
- Remember dark means very little of the channel's colour is present, so lack of blues in the picture results in the blue channel being dark.

Colour channels 15

- Similar to the way RGB and hex colours are represented.
- Therefore it's logical for Affinity to view image colours this way.
- The colour image we see is the sum of these grayscale images.
- How many channels do you think a grayscale image contains?

Masks 16

- We discussed selections last week.
- Difficult to make perfect selections.
- Especially difficult when picture contains hair, fur, or other unstructured elements.
- Even tough with several selection tools, add/remove/intersect, and other refinement tools.

Masks 17

- Masks can help a little…
- What is a mask?
- It's a special layer linked to a regular pixel layer that controls the transparency of that linked layer.
- You can select which regions in the image represent transparency and which represent opaque colours.

Masks 18

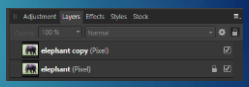
- Selections are often converted directly to masks.
- Masks are like saved selections.
- They are also non-destructive – more on this shortly.

Masks 19

- Some selections are very complex and tedious to make.
- Imagine you make one little mistake and have to start all over after 10 minutes of carefully making a complex selection! ☹
- A mask preserves the selection so you can experiment with effects without losing the selection.

Masks 20

- Suppose we want to add funky colours to this elephant's ear. This picture is in a layer. For later use, duplicate this layer.

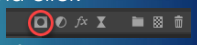


Masks 21

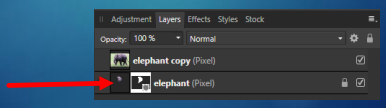
- Use any selection tool to select just the ear.

Masks 22

- With that selection active, look under the Layers panel and click the "Mask Layer" button.

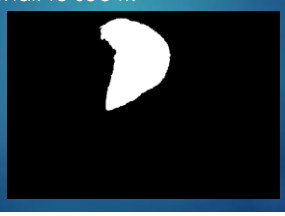


- There is now a thumbnail of the mask in colour and another in black and white.



Masks 23

- What does the mask look like?
- Hold Alt and click on the mask thumbnail to see it.



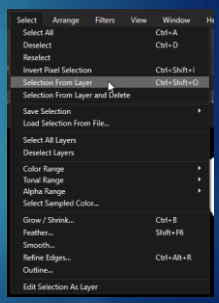
Masks 24

- Masks are shown in black and white (and sometimes gray).
- Black = hidden regions
- White = visible regions
- Gray = controls opacity (partially visible regions)

Masks

25

- If you ever need to re-select a mask region, it is easy to do.
- Enter the mask view (Hold Alt and click on the mask thumbnail).
- Click Select > Selection From Layer.



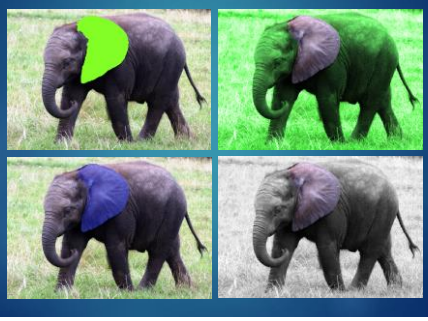
Masks

26

- Effects can be applied directly to mask selections.
- Effects can be applied to whole images.
  - Masks can block specific regions from being affected.
- Examples of both cases shown on next slide.

Masks

27



Masks

28

- Another way to modify masks is to go into this black and white mask view and select the Brush Tool.
- Paint with white or black paint to add or remove areas respectively.
- Other colours show up as grays to create translucent regions.

Masks

29

- Painting masks this way allows us to modify its shape and outline easily.
- Changing a selection is sometimes difficult while maintaining the rest of the selection.
- Changing a mask doesn't rely on keeping it selected.

Masks

30

- Suppose we have these two layers and want to place the moon onto the picture of the city skyline.

Masks

31

- Select the moon and create a mask.
- Which selection tool? Up to you! The best options are:
  - Selection Brush Tool
  - Flood Select Tool
  - Elliptical Marquee

Masks

32

- With the moon selected, click the little icon "Mask Layer"
- Now just the moon should show up from that layer.
- Move that moon around to be positioned in the upper right region of the background image.

Masks

33

Masks

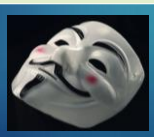
34

- Why didn't we just use the eraser tool to remove the background around the moon?
- This is an option but erasing or modifying the actual layer is usually not recommended.
- Masks are the better method.
- But why?

Masks vs. Erasers

35

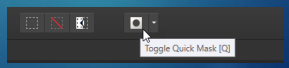
MASKS	ERASERS
Pixels are visible or invisible, but always there.	Erased pixels are removed permanently.
Easy to change which are visible and which aren't within the mask.	Undo or History State can be used to correct a mistake but limited to one session.
Always a great option.	Usually a bad option.



Quick mask

36

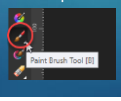
- Quick mask is not really a mask.
- It's actually another selection tool.
- Allows you to paint out a selection.
- White paint adds to selection and black paint removes from selection
- Enter/exit Quick Mask mode with:



Quick mask

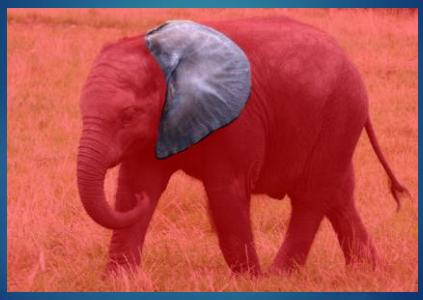
37

- By default, a red translucent layer is shown over the image.
- Select the Paint Brush Tool and set the main colour is set to white.
- Begin painting where you want to select. If you make a mistake, switch to black paint to cover the mistake.



Quick mask

38



Quick mask

39

- Click the Toggle Quick Mask icon again to leave this mode.
- The region(s) that were painted in white in Quick Mask mode are now selected in regular mode.
- You can switch back and forth to refine your selection by painting in white or black as needed.

Quick mask

40

Tilt-shift photography

41

- Tilt-shift is an effect in which the foreground is focused and the background is blurred.
- This is usually used to give the illusion of a miniature model.
- Works best for pictures from an elevated viewpoint, and that contain cars, houses, boats, etc.

Tilt-shift photography

42

Tilt-shift photography

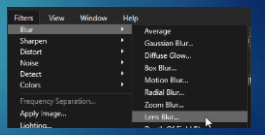
43

- Simple way to apply this effect is:
  - Enter Quick Mask mode
  - Use the Gradient Tool and create a vertical gradient over the image.
  - Make both gradient stops (endpoints) white and insert a stop in the middle that is black.

Tilt-shift photography

44

- Exit Quick Mask mode.
- There are two rectangle selections: one across the top and one across the bottom.
- Click Filter > Blur > Lens Blur to blur the active selection. Try a Radius of 1-3px.
- Push Apply.



Gradient masks

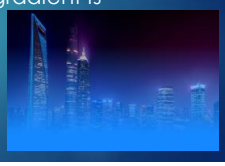
45

- Gradients are also useful for fades and gradual colour changes.

Gradient masks

46

- Remember in a mask, white = visible and black = hidden.
- Gradient masks are black to white so the effect is only visible in part of the image (where the gradient is white).
- Let's look at how this fade effect was made.



Gradient masks

47

Original picture

Gradient mask

Gradient masks

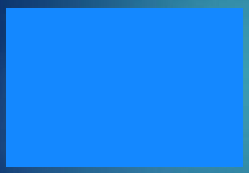
48

Mask applied to original picture:

or

Gradient masks

49



Layer below masked image

Final product

Pixel manipulation

50

- How are most image effects done?
- Often by pixel manipulation.
- Remember images are just grids of individual coloured cells.
- These colours can be analyzed and changed to other colours.
- Can be done on the entire image or on a specific region.

Pixel manipulation

51

- For example, say we want to darken an image.
- Recall that low colour values are darker (close to 0).
- The algorithm looks at each pixel colour individually and decreases its colour value in all 3 channels.

Pixel manipulation

52

- Affinity Photo handles these algorithms so you don't have to know how they all work.
- However, it is good to understand these fundamental concepts about pixel manipulation.

Colour manipulation

53

- Recolouring images is often useful.
- There are several ways to do this in Affinity Photo. We'll look at a few.
- The bottom of the Layers panel has several icons. Click the half-moon looking one.

- This will reveal a list of ways to modify the colours.

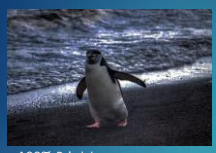
Colour manipulation

54

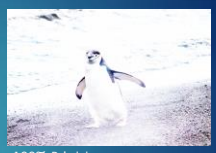
- Brightness and Contrast
  - Brightness is simple: how dark or light the image is.
  - Contrast is how *different* the brightness is throughout various parts of the image.
    - Emphasizes or minimizes the extremes (darks and lights)

Colour manipulation

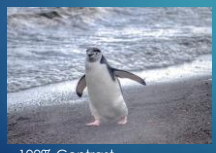
55



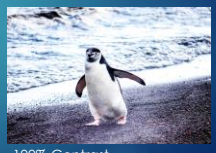
-100% Brightness



100% Brightness



-100% Contrast



100% Contrast

Colour manipulation

56

- HSL
  - Hue – the base colour, without specific information about darkness
  - Saturation – the intensity of the hue; pure vs. muted or whitewashed
  - Lightness – the brightness of the colour
  - HSL is a colour model like RGB and there are algorithms to convert between these different models.

Colour manipulation

57

- Black & White
  - This is straightforward; it simply converts the image to grayscale.
- Lens Filter
  - Apply a cooling, warming, or other colour filter to the image.
  - Similar to Instagram filters.

Colour manipulation

58

- Selective Color
  - This allows you to control specific colours in the image.
  - Choose which colours you want to affect in the original image.
  - Use the C, M, Y, and K sliders.
  - Play with them to see the effects.

Colour manipulation

59

- Selective Color
  - If the colour you chose isn't in the image, the sliders won't do much.
  - i.e. if you have an image entirely of green grass and you choose Reds, the sliders won't change anything.
  - If you choose Greens, then the sliders will make a big difference!

Colour manipulation

60

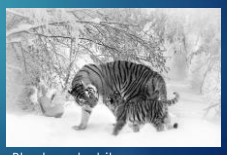
Colour manipulation

61

Original image

Blue lens filter

HSL adjustment



Black and white