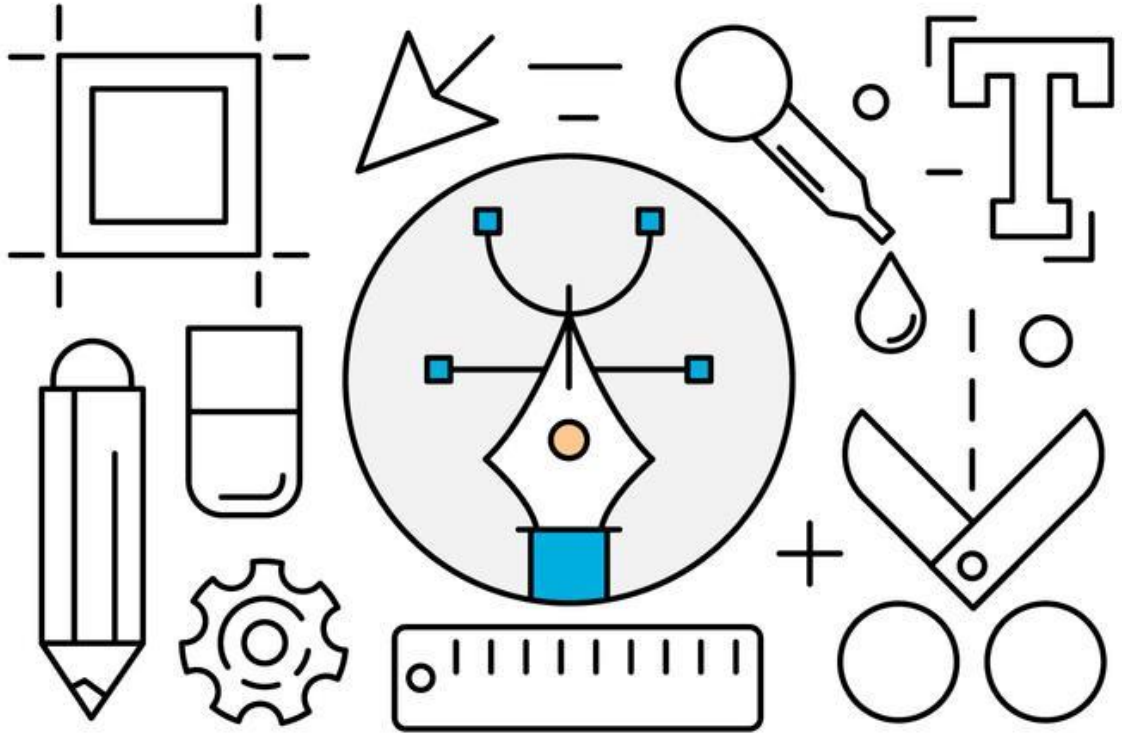
07. Multimedia Content Development

IT1306-Free and Open Source Software for Personal Computing

Level I - Semester 1



Multimedia Content Development

Introduction to Graphic Design

What is Graphic Design?

- The process of visual communication and problem-solving through the use of typography, photography, iconography and illustration ~ Wikipedia
- The craft or an art of combining text, picures creating visual content to communicate messages.

Introduction to Graphic Design

- Different graphic design application software
  - There are different types of graphic design applications.
  - Applications can be categorized under
    - Free and Open Source (FOSS)
    - Proprietary
    - Online / Freeware

Introduction to Graphic Design

- Examples of graphic design applications
  - InkScape
  - GIMP
  - Adobe Photoshop
  - Pixlr
  - Adobe Illustrator
  - SVG Edit

Activity 01

- Identify examples for different types of graphic design applications.
- Categorize them under “Proprietary”, “Free and Open Source” or “Online”

GIMP

GNU **I**mage **M**anipulation **P**rogram

GIMP

- GIMP is a
  - suitable for a variety of image manipulation tasks, including photo retouching, image composition, and image construction.
  - standard application in most GNU/Linux distributions.
  - free software application covered by the General Public License (Provides users with the freedom to access and alter the source code that makes up computer programs)
  - multi-platform photo manipulation tool.
  - freely available software from many sources for many operating systems including Microsoft Windows.

Getting familiarize with the working environment

For more information Refer to Chapter 3: GIMP Manual

https://docs.gimp.org/2.10/en

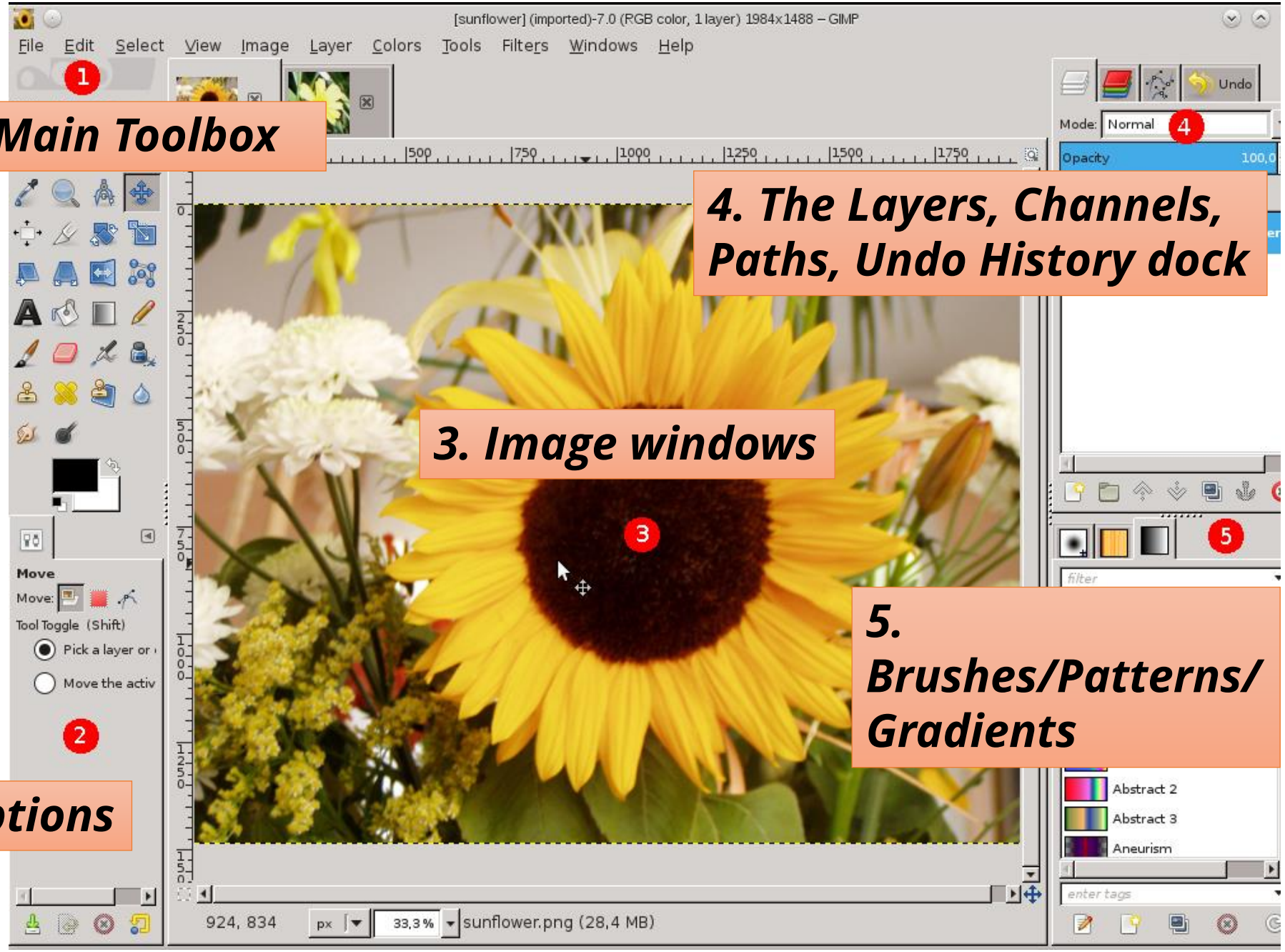
How to download & install GIMP?

Go to https://www.gimp.org/downloads/

Select your OS

Follow the necessary instructions to install GIMP …

Getting Familiarize with the Working Environment



Getting familiarize with the working environment

- ***The Main Toolbox**:*
  - Contains a set of icon buttons used to select tools.
  - By default, it also contains the foreground and background colors.
  - Can add brush, pattern, gradient and active image icons.
  - Use Edit → Preferences → Toolbox to enable, or disable the extra items.
- ***Tool options:***
  - Show options for the currently selected tool

Getting familiarize with the working environment

- **Image windows:**
  - Each image open in GIMP is displayed in a separate window.
  - Many images can be open at the same time.
- **The Layers, Channels, Paths, Undo History dock:**
  - The dialogs in the dock take the form of tabs.
  - The Layers tab - shows the layer structure of the currently active image, and allows it to be manipulated in a variety of ways.
- **Brushes/Patterns/Gradients:**
  - Manage brushes, patterns and gradients.

Getting familiarize with the working environment

Tool Box

1. ***Tool icons:***
   - Buttons which activate tools for selecting parts of images, painting an image, transforming an image, etc.
2. ***Foreground/Background colors:***
   - Shows the current foreground and background colors.
   - Click on the double-headed arrow to swap the two colors.
   - Click on the small symbol in the lower left corner to reset them to black and white.

Getting familiarize with the working environment

Tool Box

3) Brush/Pattern/Gradient:

- Paintbrush is used to paint on the image, includes operations like erasing and smudging.
- Pattern, is used in filling selected areas of an image
- Gradient is used to smoothly vary the range of colors.

4) Active Image:

- Can work with many images at once,
- At any given moment, only one image is the “active image”.

Working with Images

For more information Refer to Chapter 5- Chapter 6: GIMP Manual

https://docs.gimp.org/2.10/en

Working with Images

- A GIMP Image
  - may consists of a complicated structure (may contain a stack of layers and several other types of objects: a selection mask, a set of channels, a set of paths, an "undo" history, etc.)
- Basic property of an image is its *mode.*
  - RGB,
  - grayscale, and
  - Indexed

Activity 02

- Read more on different modes of an image and identify the difference among RGB, Grayscale and Indexed mode

Working with Images

- **Creating a new File**
  - Use File → New to open the Create a new image dialog
  - Modify the initial width and height of the file or use the standard values, then create a new image file.
- **Open File**
  - Use File → Open to open the Open Image dialog (allows you to navigate to the file and click on its name).
- **Drag and Drop**
  - Drag and drop a file onto the GIMP Toolbox to open the file.
  - Drag an image into an open GIMP image to add dropped file as a new layer, or set of layers, to the already open image.
- **Copy and Paste**
  - File → Create → From Clipboard to create a new image from the clipboard; OR
  - Edit → Paste as → New Image

Working with Images

Save / Export Images

- When the work is done with an image or the intermediate versions can be saved using several file formats.
- File Formats

  XCF
  - GIMP's native format
  - useful because it stores everything about an image including layers, transparency, etc
  - XCF files are not readable by most other programs that display images therefore the final version can be exported in to more widely used formats, such as JPEG, PNG, TIFF, etc.

Working with Images

Preparing Images for the Web

- prepare images for web sites.
- create small files with minimal loss of image quality - keep the images look as nice as possible while keeping the file size as small as possible.
- An optimal image for the web depends upon the image type and the file format.
  - Use JPEG for Photographs because they usually have many colors and great detail.
  - An image with fewer colors, such as a button, icon, or screenshot, is better suited to the PNG format

Activity 03

- Read and learn different ways of preparing images for the Web.

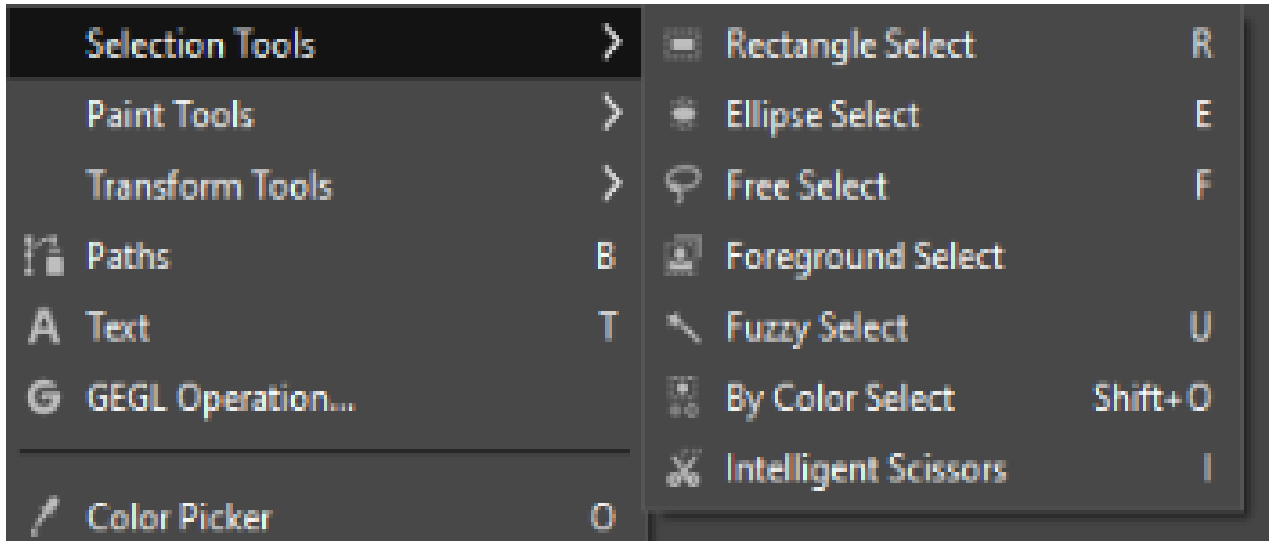
Drawing & Painting

For more information Refer to different sections in Chapter 7, Chapter 9 and Chapter 14: GIMP Manual

https://docs.gimp.org/2.10/en

Working with selections and selection tools

- Selection tools are designed to select regions from the active layer so you can work on them without affecting the unselected areas.

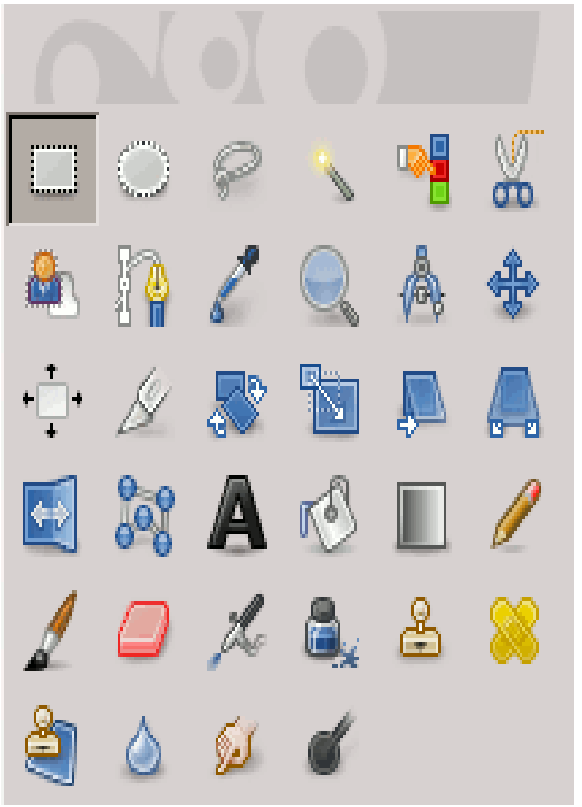


- There are seven selection tools:
  - Rectangle Select;
  - Ellipse Select;
  - Free Select (Lasso);
  - Fuzzy Select (Select Contiguous Regions) ;
  - Select by Color;
  - Intelligent Scissors (Select Shapes from Image) and
  - Foreground Select.

Working with selections and selection tools

The Rectangle Selection tool

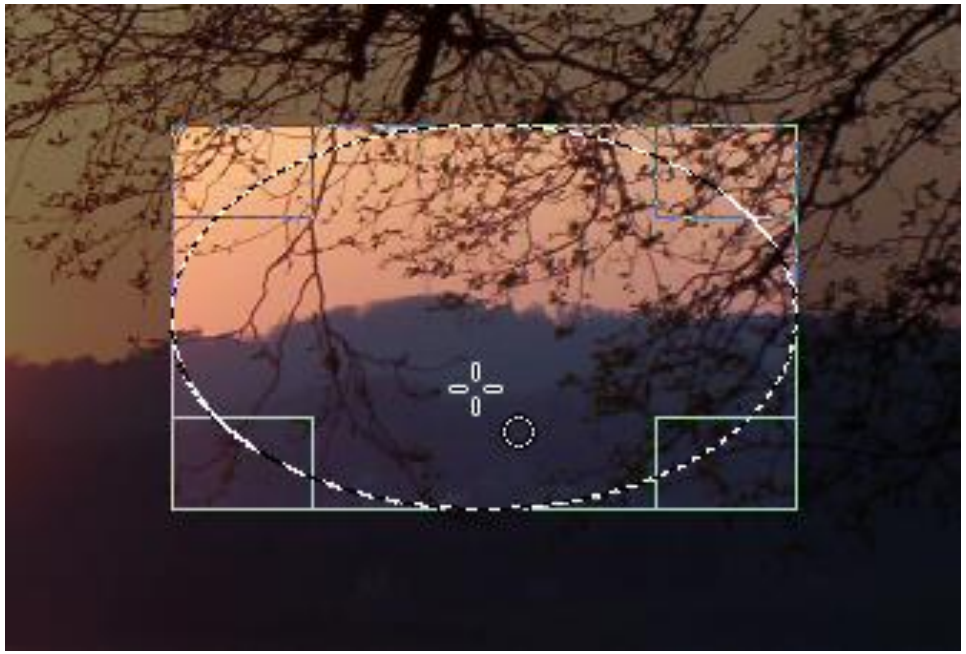
- Select a rectangular regions of the active layer.



Working with selections and selection tools

The Ellipse Selection tool

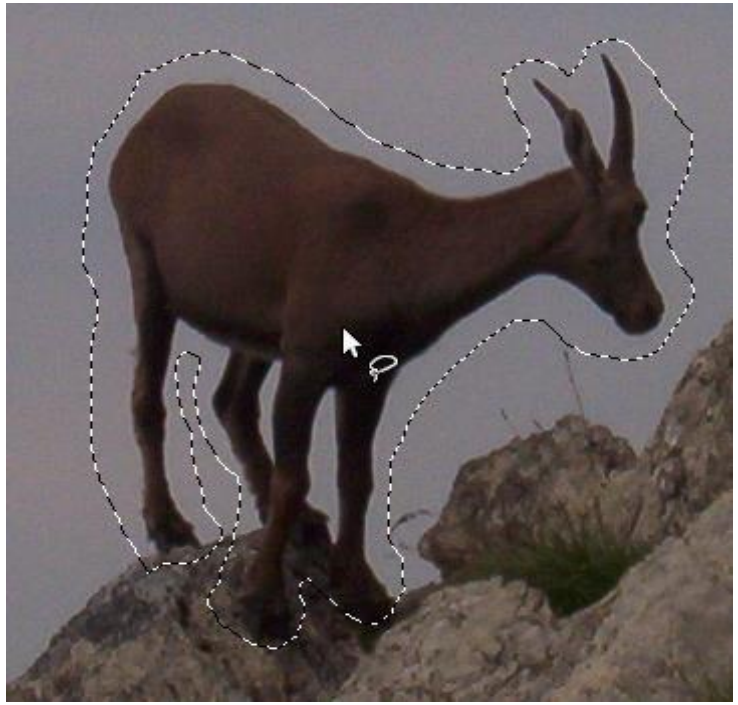
- Select circular and elliptical regions from an image.

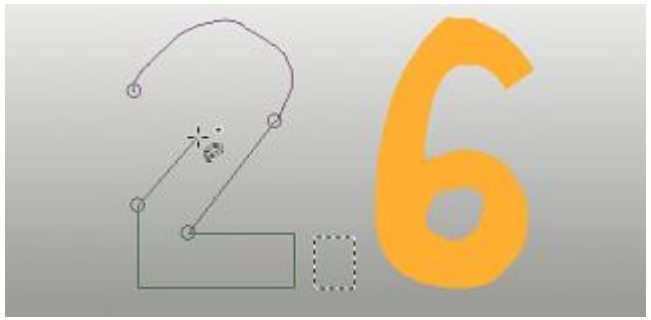


Working with selections and selection tools

Free Selection (Lasso)

- Create a selection by drawing it with the pointer.

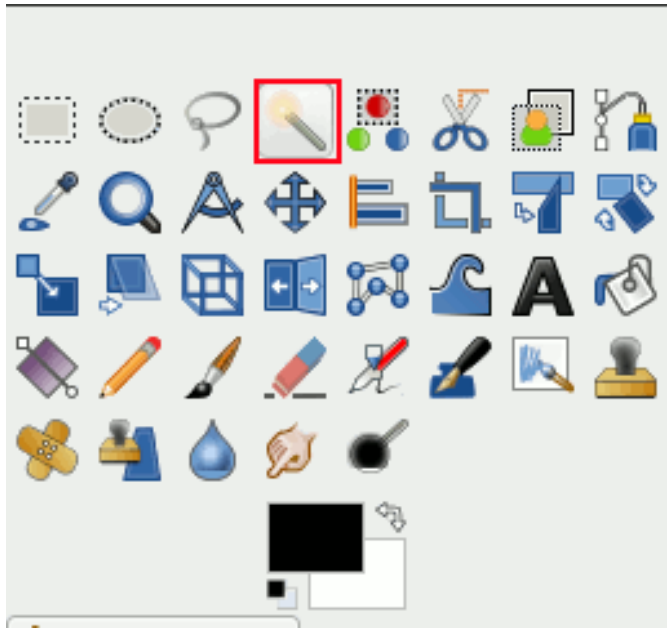




Working with selections and selection tools

Fuzzy selection (Magic wand)

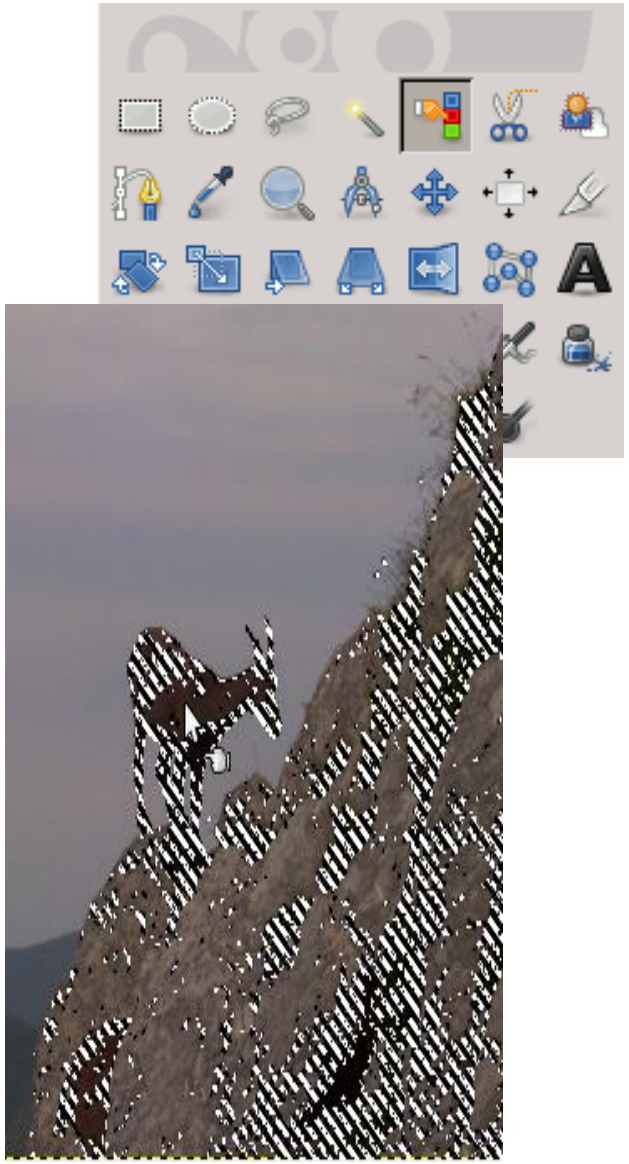
- Select areas of the current layer or image based on color similarity.



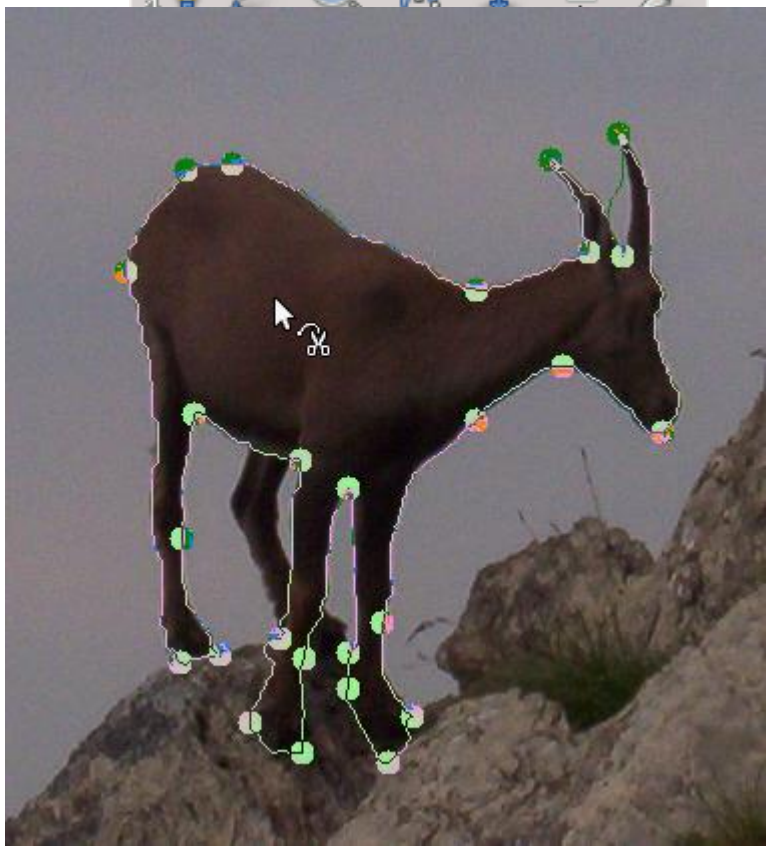
Working with selections and selection tools

Select By Color

- Select areas of an image based on color similarity.
- Works a lot like the Fuzzy Select tool.
- The main difference
  - Magic Wand selects *contiguous* regions, with all parts connected to the starting point by paths containing no large gaps;
  - Select by Color tool selects all pixels that are sufficiently similar in color to the pixel you click on, regardless of where they are located.



Working with selections and selection tools



Intelligent Scissors

- Some features are similar to Lasso & some to Path tool .
- Useful to select a region defined by strong color-changes at the edges.
  - To use the Scissors, click to create a set of "control nodes" (referred to as anchors or control points), at the edges of the region.
  - The tool produces a continuous curve passing through these control nodes, following any high-contrast edges it can find.

Working with selections and selection tools

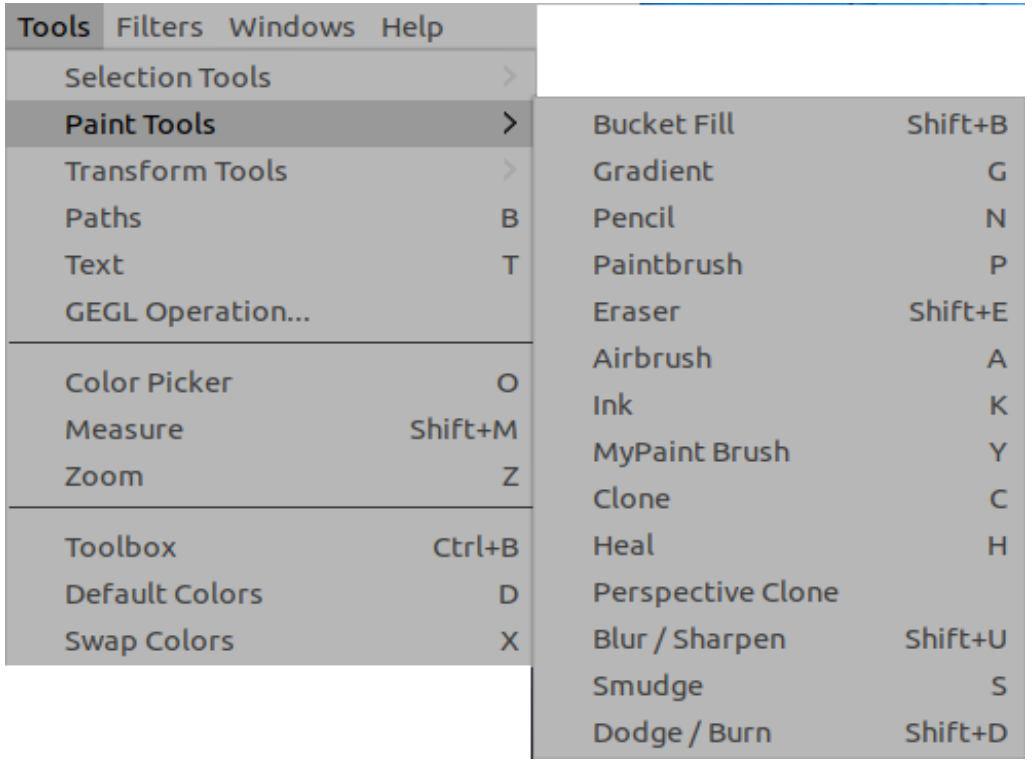
Foreground Select

- Extract the foreground from the active layer or from a selection.
- After the selection is made, with its marching ants, you can copy-paste or click-and-drag it to another image used as background, and, inverting the selection and can make changes in background.

Working with Drawing and Painting Tools

Paint Tools

- The GIMP Toolbox includes several “paint tools”, all grouped together at the bottom of the tool box.



Working with Drawing and Painting Tools

Basic Paint Tools or Brush Tools

- **Pencil,**
- **Paintbrush,**
- **Airbrush and**
- **Ink tool**

Other Tools

- **Bucket Fill:** fills with color or pattern;
- **Gradient fills:** with gradients;
- **Eraser:** erases;
- **Clone tool:** copies from a pattern, or image;
- **Perspective Clone tool:** copies into a changed perspective;
- **Heal tool:** corrects small defects;
- **Convolve tool:** blurs or sharpens;
- **Smudge tool:** smears;
- **Dodge/Burn tool:** lightens or darkens.

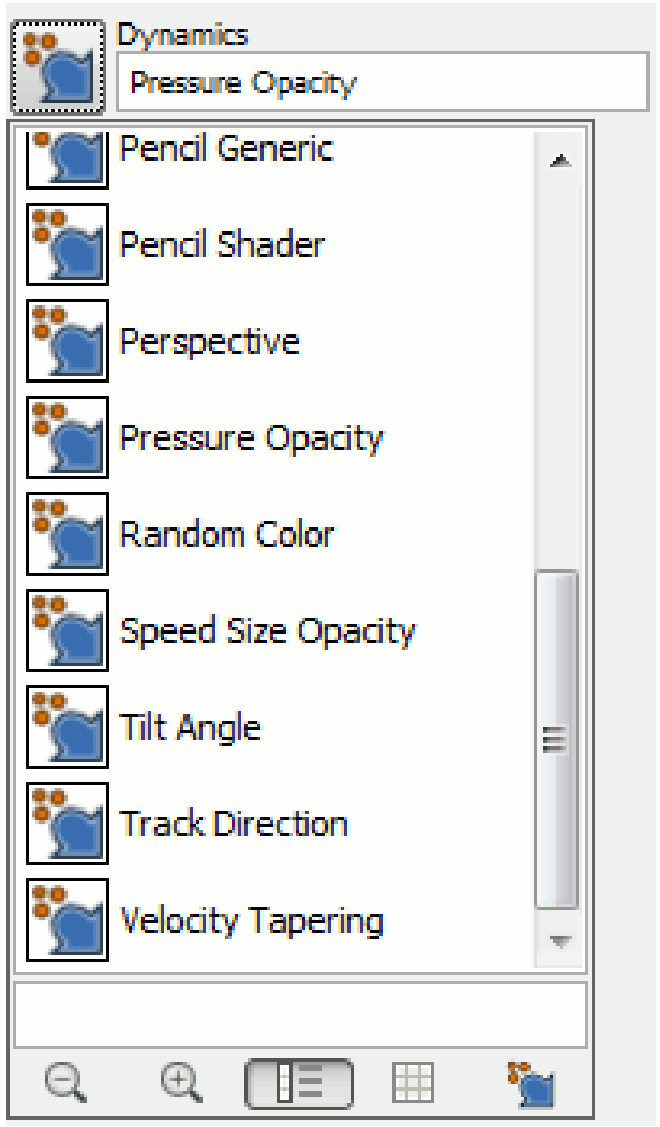
Working with Drawing and Painting Tools

Paint Dynamics

- apply a more “real feeling” to the brush by connecting one or more of the brush parameters to the way of using the brush.

  E.g. Change the width of the pencil according to the speed of the stylus or the mouse, make the color saturation depending on the stylus pressure, make the color changing as the direction of the brush changes on the canvas, etc.

- make some of the behaviors of the drawing tools to act more like the physical (“real”) tools.
- To open
  - Windows → Dockable Dialogs → Paint Dynamics,



Working with Drawing and Painting Tools

Brush Tools (Pencil, Paintbrush, Airbrush)

- Share the same brushes, and the same options for choosing colors, either from the basic palette or from a gradient.
- All are capable of painting in a wide variety of modes.

Three strokes painted with the same round fuzzy brush (outline shown in upper left), using the Pencil (left), Paintbrush (middle), and Airbrush (right).

Working with Drawing and Painting Tools

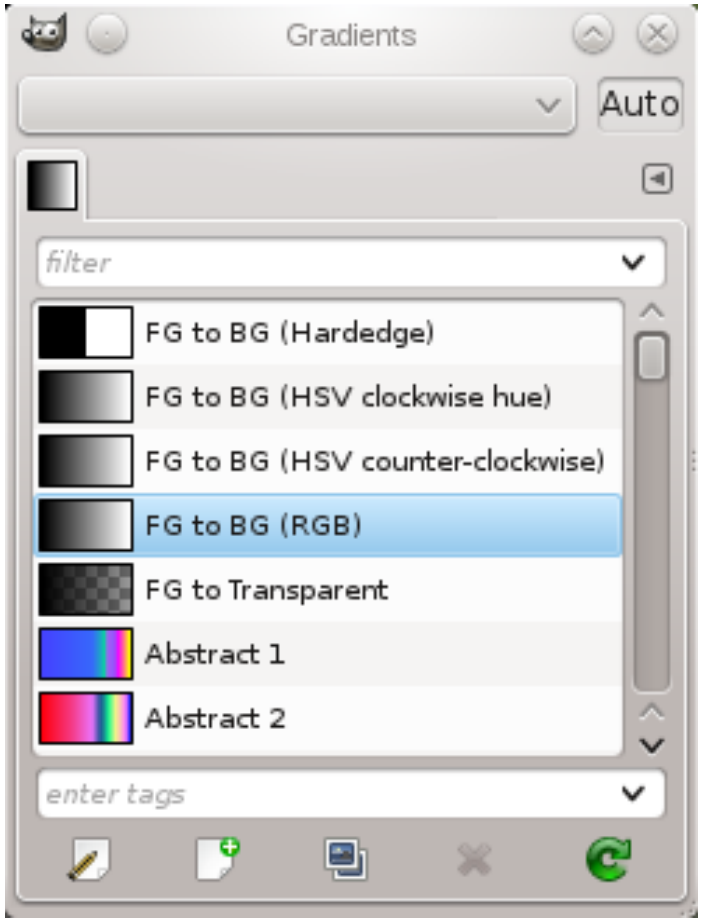
Bucket Fill

- This tool fills a selection with the current foreground color.
- **Ctrl**+click and use the Bucket tool, will use the background color instead.
- Depending on how the tool options are set, the Bucket Fill tool will either fill the entire selection, or only parts whose colors are similar to the point you click on.

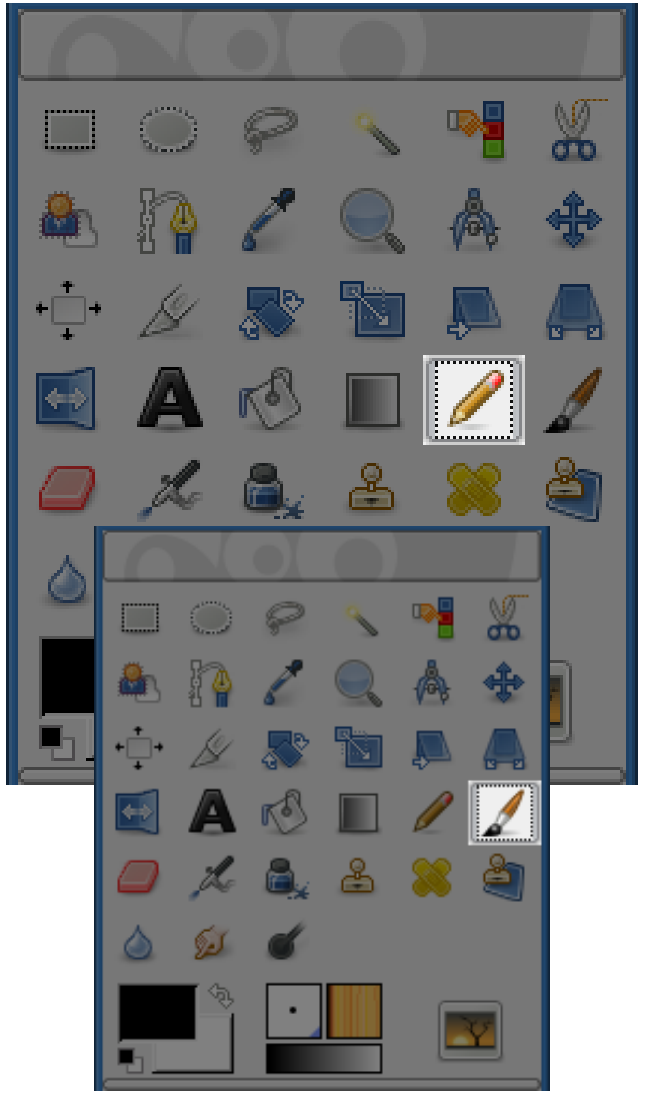
Working with Drawing and Painting Tools

Gradient Fill

- fills the selected area with a gradient from the foreground and background colors by default, or using many other options.
- drag the cursor in the direction you want the gradient to go and release the mouse button when you feel you have the right position and size of your gradient.
- The softness of the gradient depends on how far you drag the cursor. The shorter the drag distance, the sharper it will be.



Working with Drawing and Painting Tools



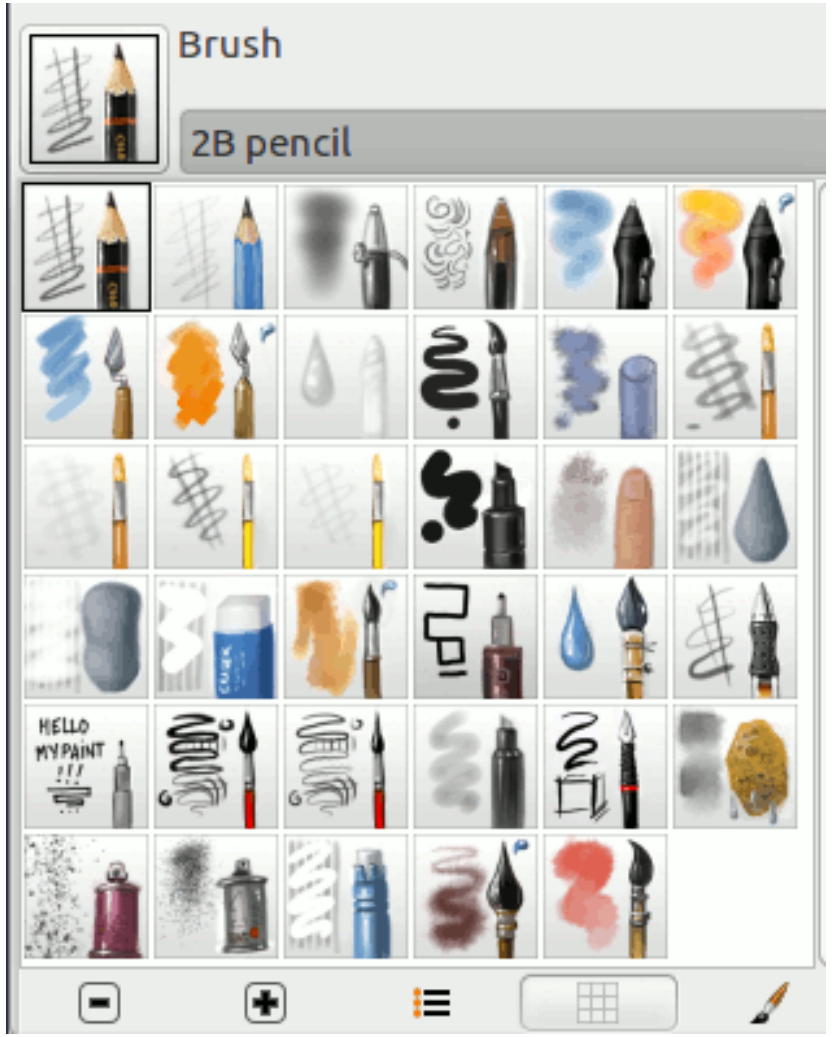
Pencil and Paintbrush

- Pencil draw free hand lines with a hard edge.
- Paintbrush tool paints fuzzy brush strokes.
- Pencil and paintbrush are similar tools.
- The main difference between the two tools is that the pencil tool will not produce fuzzy edges, even with a very fuzzy brush. It does not even do anti-aliasing.

Working with Drawing and Painting Tools

My Paint Brush

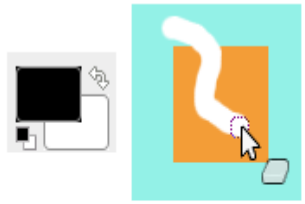
- Lots of specific brushes.
- Activity: Check what you can do



Working with Drawing and Painting Tools

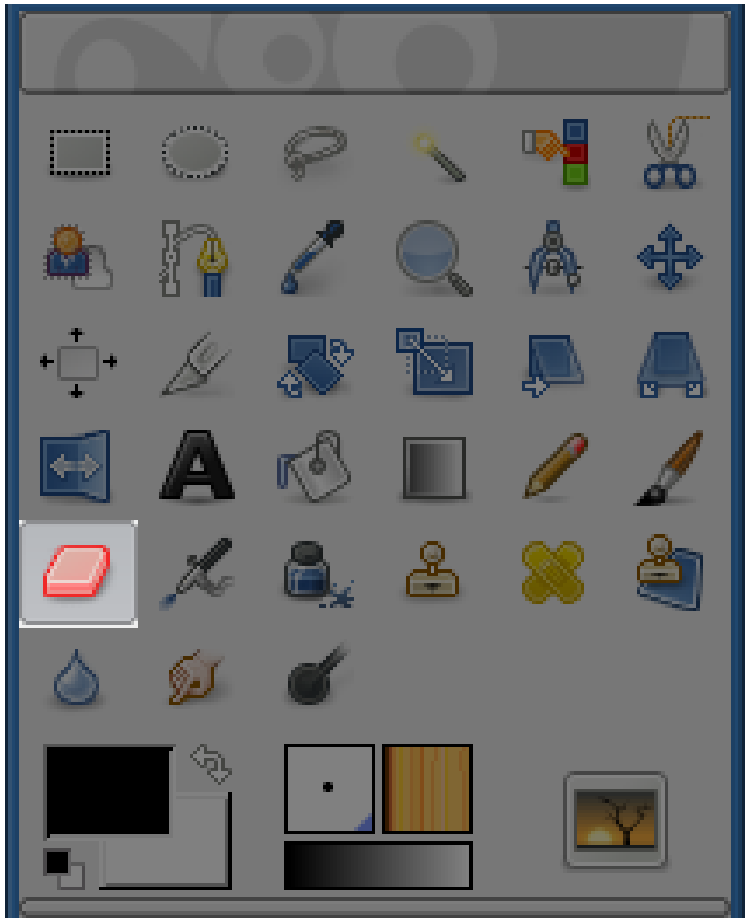
Eraser

- Remove areas of color from the current layer or from a selection of this layer.



The Background Color is White. The image has no Alpha channel. The Eraser (Opacity 100%) shows the BG color.

The image has an Alpha channel. The Eraser shows transparency.



Working with Drawing and Painting Tools

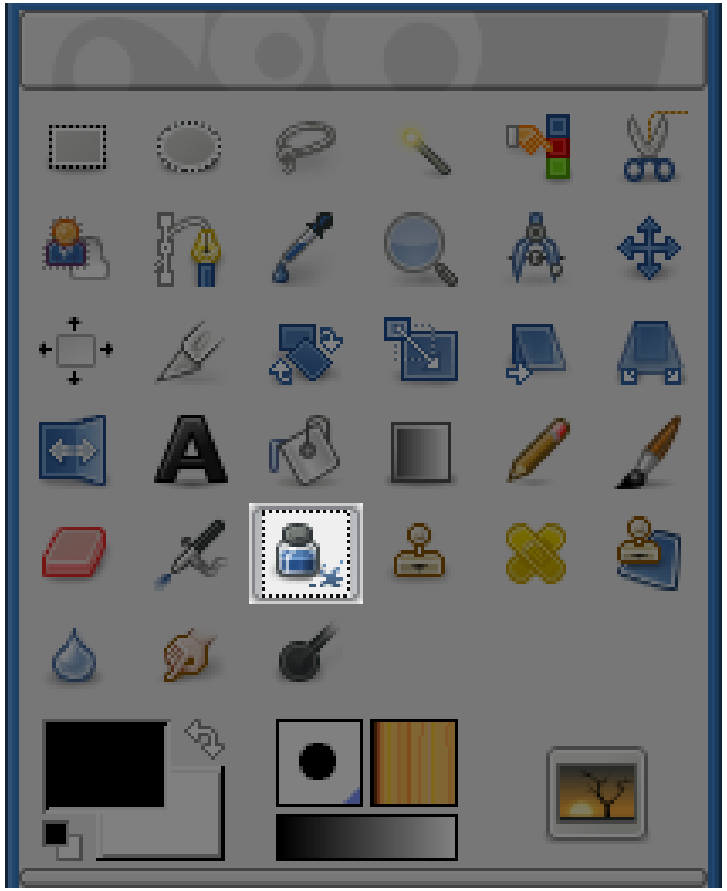
Airbrush

- Emulates a traditional airbrush.
- Suitable for painting soft areas of color.

Working with Drawing and Painting Tools

Ink tool

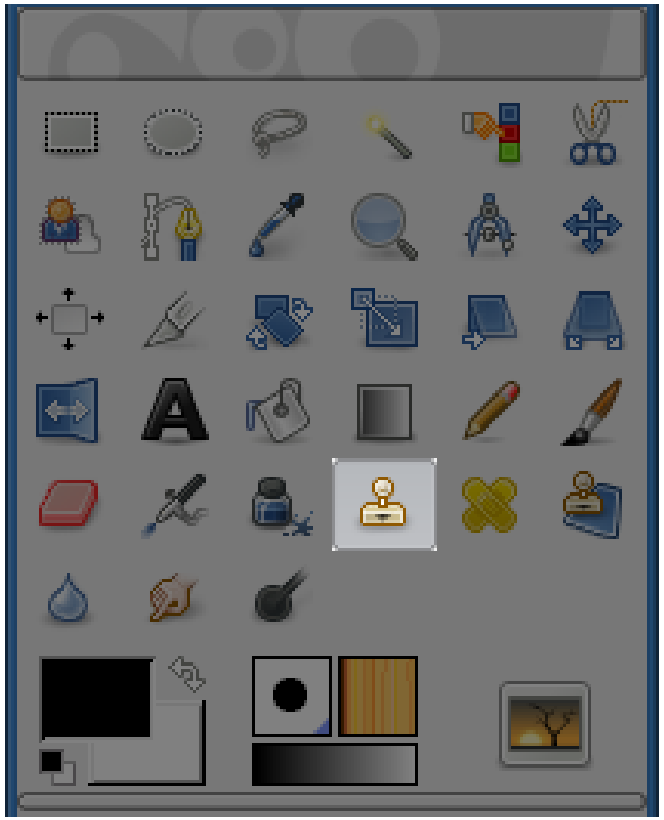
- Uses a simulation of an ink pen with a controllable nib to paint solid brush strokes with an ant aliased edge.
- The size, shape and angle of the nib can be set to determine how the strokes will be rendered.



Working with Drawing and Painting Tools

Clone

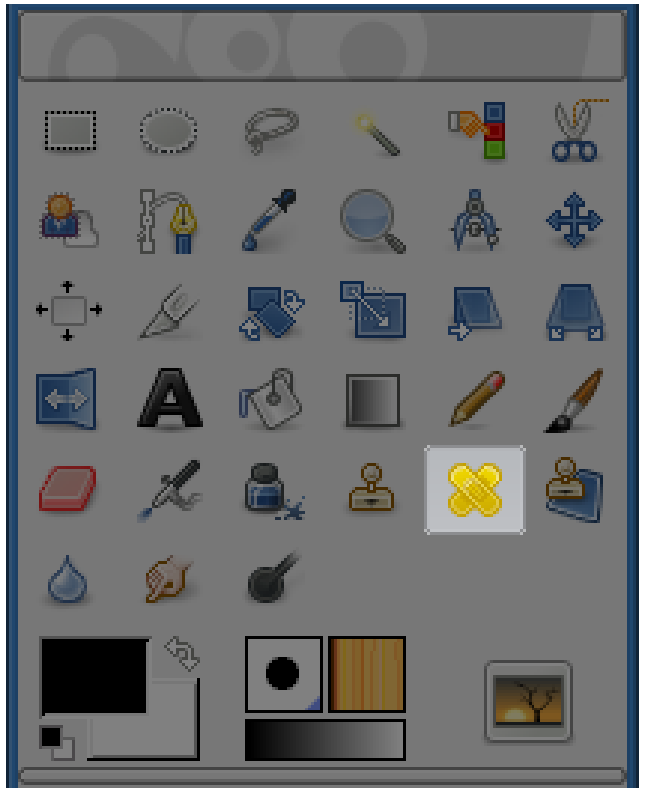
- uses the current brush to copy from an image or pattern.
- It has many uses:
  - repair problem areas in digital photos, by “painting over” them with pixel data from other areas.
  - draw patterned lines or curves:



Working with Drawing and Painting Tools

Heal

- Similar to the Clone Tool
- More smarter to remove small failures in images.
  - e.g: used to remove wrinkles in photographs.
- Healing is not Cloning
  - the result is different (see the next slide)



Working with Drawing and Painting Tools

Heal vs Clone

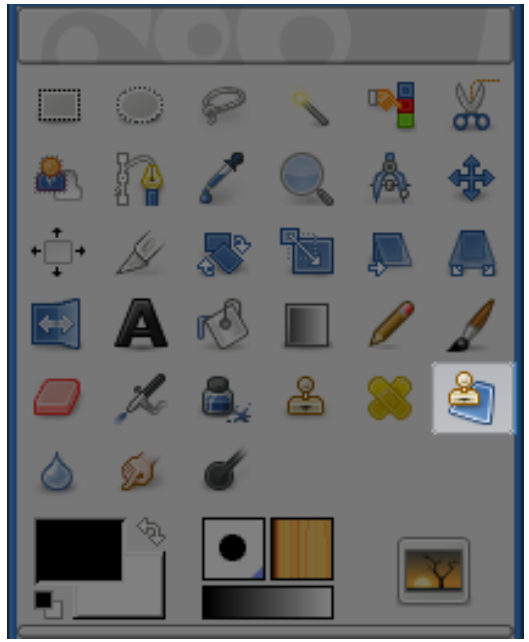
Cloning on the left. All colors are transferred.

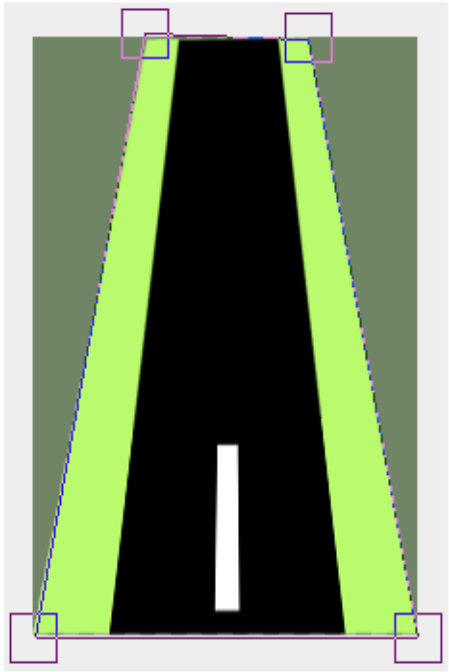
Healing on the right. Colors are much less transferred, especially on borders where surrounding pixels of destination are taken in account.

Working with Drawing and Painting Tools

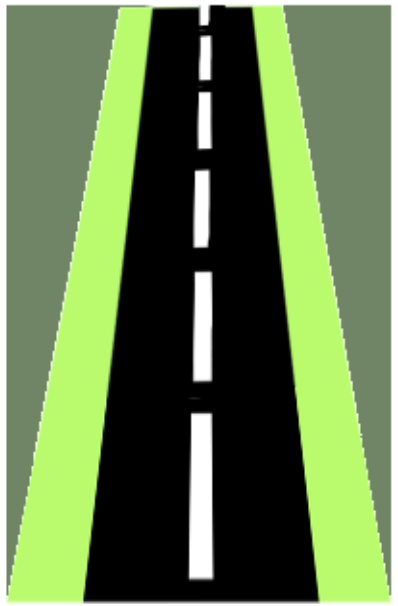
Perspective Clone

- Allows you to clone according to the perspective.





The "Modify Perspective Plane" is checked. Vanishing lines have been placed.

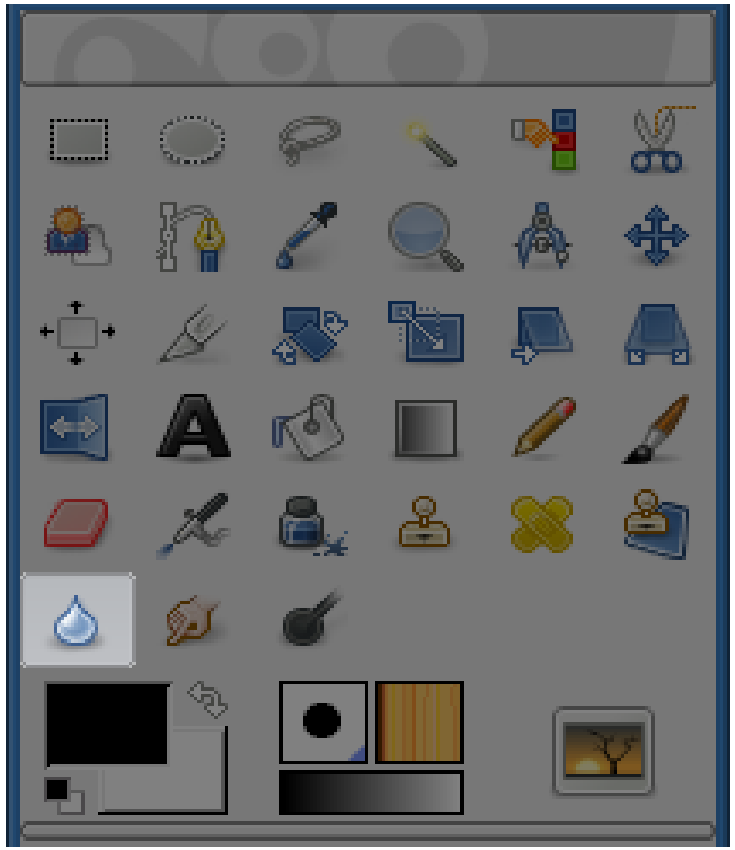


The "Perspective Clone" option is checked. The white rectangle has been cloned. You see it goes smaller going away.

Working with Drawing and Painting Tools

Blur/Sharpen

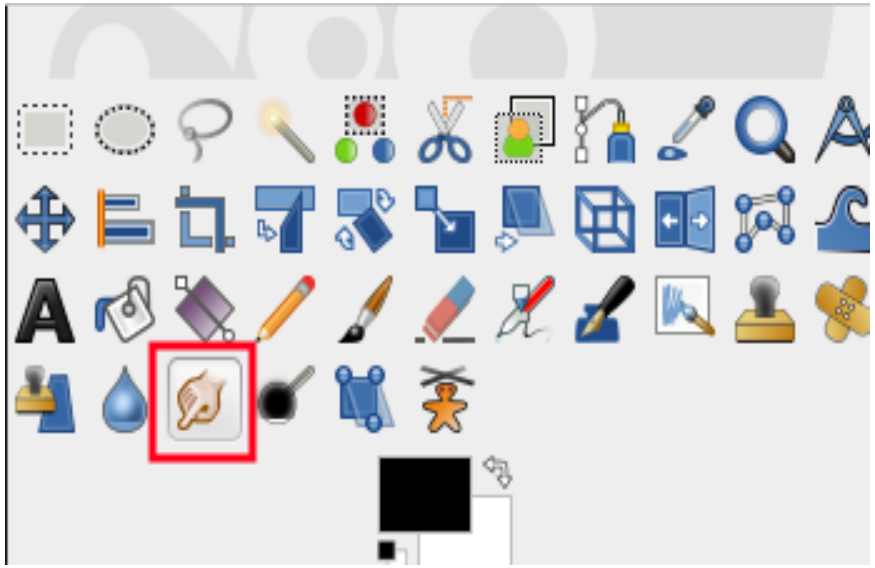
- Uses the current brush to locally blur or sharpen the image.
- Blurring with it can be useful if some element of your image stands out too much, and you would like to soften it.
- In “Sharpen” mode, the tool works by increasing the contrast where the brush is applied.



Working with Drawing and Painting Tools

Smudge

- Evokes finger painting.
- If the Flow option is set to 0.00 (default), the Smudge tool uses the current brush to smudge colors on the active layer or a selection. It takes color in passing and uses it to mix it to the next colors it meets.
- When the Flow option is more than 0.00, the Smudge tool works as a brush using the foreground color of the toolbox and blend it with the underlying color.



Working with Drawing and Painting Tools

Dodge/Burn

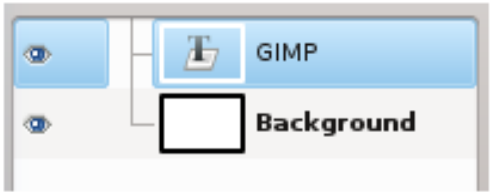
- uses the current brush to lighten or darken the colors in the image.

Working with Drawing and Painting Tools

Adding and Modifying Text

- Use the Text tool to add text.
- The text tool creates a new layer containing the text, above the current layer in the layer dialog, with the size of the text box.

Example of a text item, showing the boundary of the text layer. (Font: Utopia Bold)



The layer dialog, with the text layer above the layer which was current.

Working with Drawing and Painting Tools

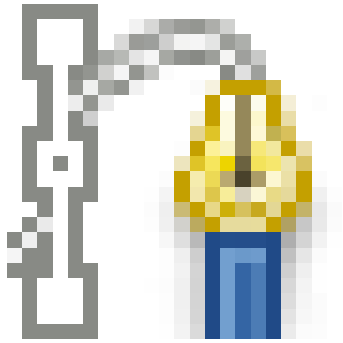
Adding and Modifying Text

- Embellishing Text

Four fancy text items created using logo scripts: “alien neon”, “bovination”, “frosty”, and “chalk”. Default settings were used for everything except font size.

Working with Drawing and Painting Tools

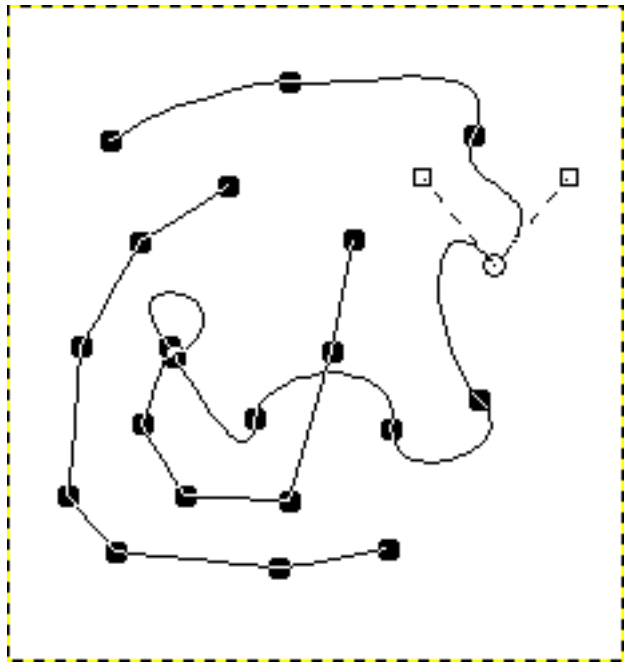
Creating Paths

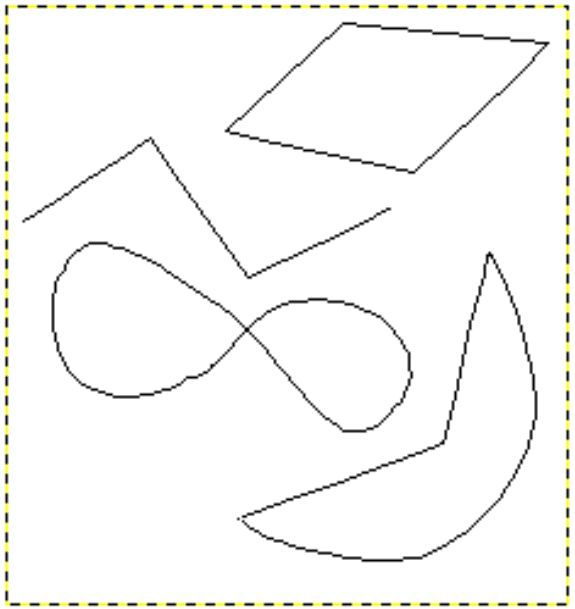


- Paths are curves (known as Bézier-curves)
- First create a path, and then stroke the path
- A Path has two main purposes:
  - Convert a closed path to a selection.
  - Any path, open or closed, can be *stroked*; that is, painted on the image in a variety of ways.
- Stroke path means to apply a specific style to the path
  - color, width, pattern...
- Use Tools → Path from the image menu or Use the relevant icon in toolbox.

Working with Drawing and Painting Tools

- Example



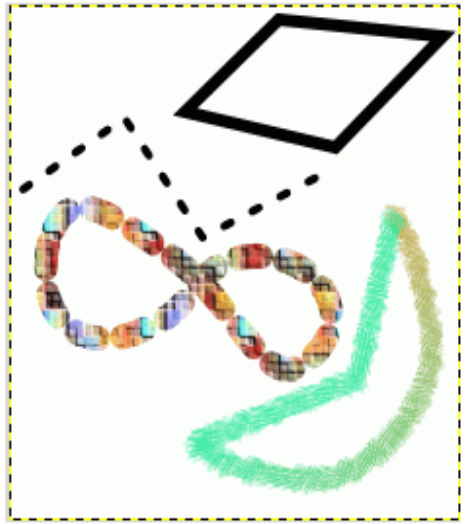


Four examples of GIMP paths: one closed and polygonal; one open and polygonal; one closed and curved; one with a mixture of straight and curved segments.

Working with Drawing and Painting Tools

Stroking a Path

- Paths do not alter the appearance of the image pixel data unless they are *stroked*,
- To Stroke use
  - Edit → Stroke Path from the image menu or
  - Paths dialog right-click menu, or
  - “Stroke Path” button in the Tool Options dialog for the Path tool.



The four paths from the top illustration, each stroked in a different way.

Working with Drawing and Painting Tools

Converting Text to a Path

- A text created using the Text tool can be transformed into a path using
  - **Path from Text** command in the context menu of the Text tool.

Text converted to a path and then transformed using the Perspective tool.

The path shown above, stroked with a fuzzy brush and then gradient-mapped using the Gradient Map filter with the "Yellow Contrast" gradient.

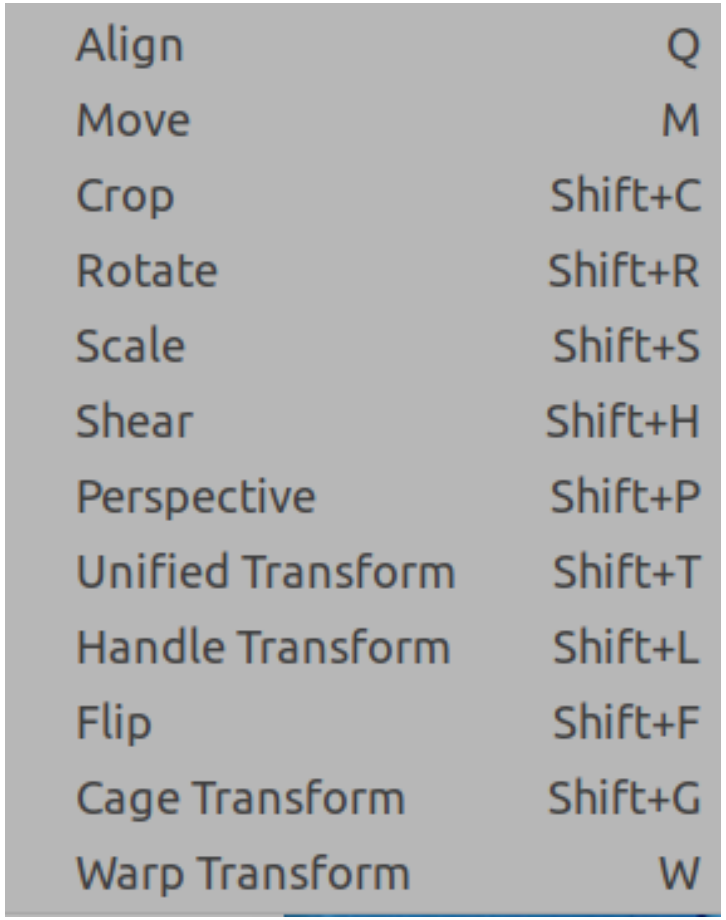
Working with Transformation Tools

For more information Refer to Chapter 14, Section 4: GIMP Manual

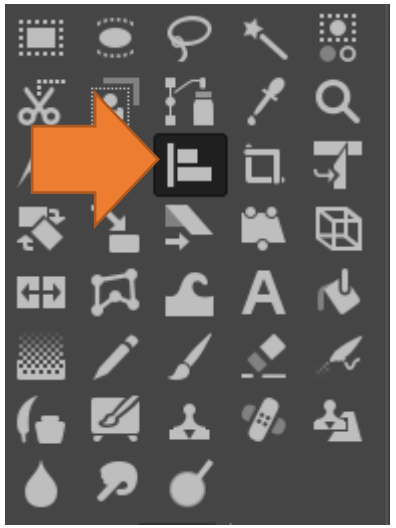
https://docs.gimp.org/2.10/en

Transform Tools

- Modify the presentation of the image or the presentation of an element of the image, selection, layer or path.
- There are eight transform tools in the tools box.
- Each transform tool has its own properties.



Transform Tools



Align

- Useful to align the image layers with various image objects.
- When the tool is selected,
  - the mouse pointer turns to a small hand.
  - click on an element of a layer in the image to choose the layer to move (with **Shift** + click, you can choose several layers to be aligned);
  - the focused layer will show small squares in corners and is called *source*.
  - buttons in the dialog become active and allows to select the *target*, i.e other layer, selection, path, the source will be aligned with.

Transform Tools

Move

- Used to move layers, selections, paths or guides.
- Works also on texts.

Transform Tools

Crop

- Used to crop or clip an image.
- Works on all the layers of the image, visible and invisible.
- Often used to
  - remove borders, or to eliminate unwanted areas to provide more focused working area.
  - get a specific image size to match the original dimensions of the image.

Transform Tools

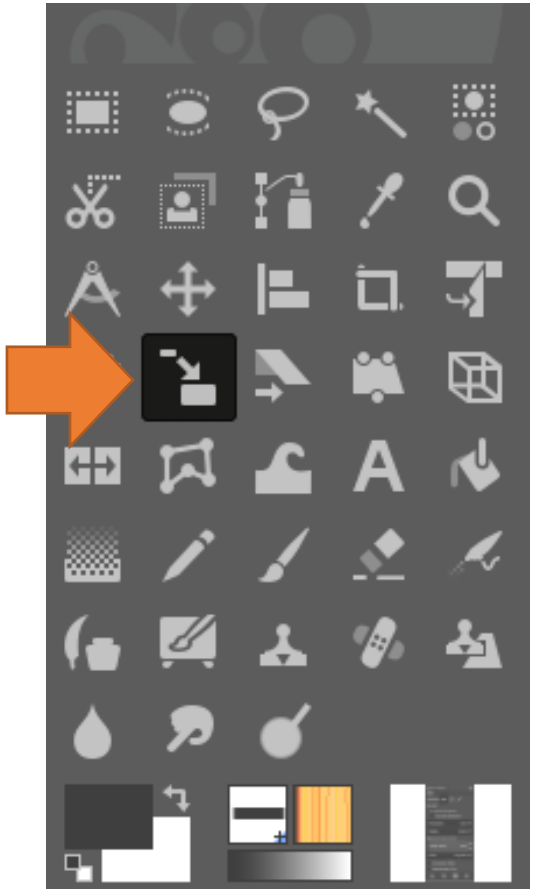
Rotate

- Used to rotate the active layer, a selection or a path.
- When click on the image or the selection with this tool a *Rotation adjustment* dialog is opened.
  - can set the rotation axis, marked with a point, and the rotation angle.
- Same can be done by dragging the mouse pointer on the image or the rotation point.

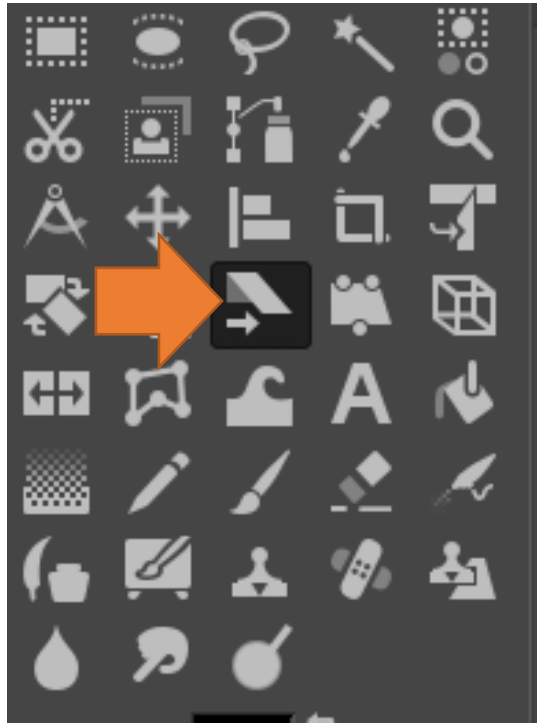
Transform Tools

Scale

- Used to scale layers, selections or paths (the Object).
- Scaling Information dialog box allows to change the Width and Height.
- Can click and drag the handles appear on corners to change dimensions.
- The preview can be moved pointing at center where a square with a cross inside.



Transform Tools



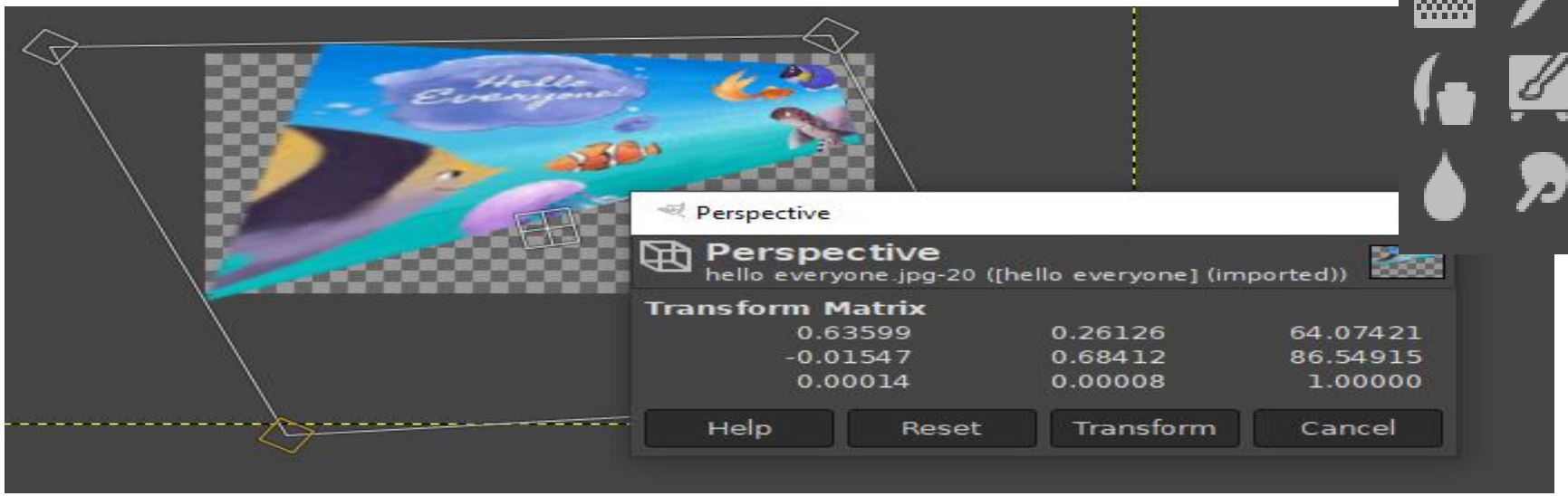
Shear

- Used to shift one part of an image, a layer, a selection or a path to a direction and the other part to the opposite direction.
- Horizontal shearing shift the upper part to the right and the lower part to the left.

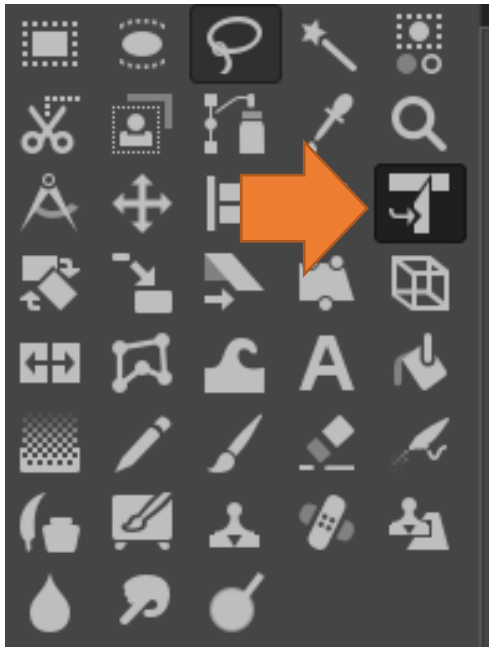
Transform Tools

Perspective

- Used to change the “perspective” of the active layer content, of a selection content or of a path.
- Can modify the perspective, by moving the handles while click-and-drag and click on Transform in the “Perspective” dialog box.



Transform Tools



Unified Transform

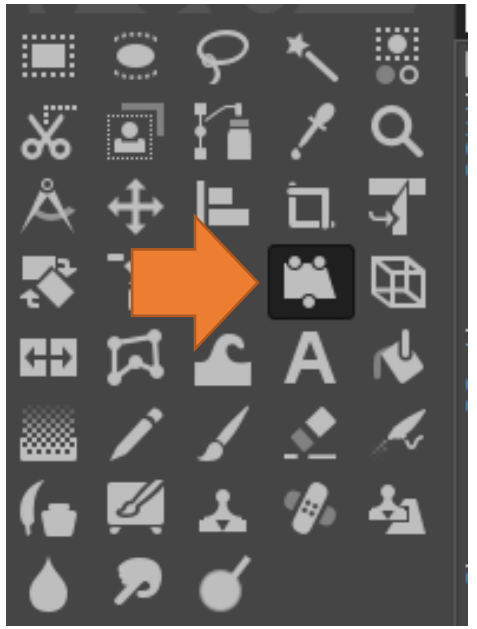
- Combines several tools:
  - Rotate, Scale, Shear and Perspective,
- Performs one or several of these actions at once in one single operation.
- Provides almost infinite possibilities of transformation.
- As other transformation tools, this tool works on the active layer.

Transform Tools

Unified Transform

- Displays several kinds of handles, on the edges:
  - Diamonds for shearing
  - Squares for scaling
  - Small diamonds for changing perspective, in large squares for Scaling.
- Click and drag a handle to perform the action of the concerned tool

Transform Tools



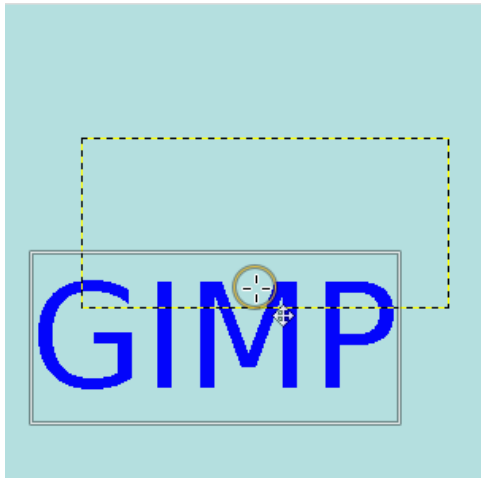
Handle Transform

- Apply moving, rotating, shearing, perspective and scaling corrections using handles placed on canvas.
- Uses 1 to 4 handles.
- The effect depends on the number of handles.
- The tool acts on a selection, or, if there is no selection, on the whole layer.
- The active handle is bigger than the others.
- When the mouse pointer is on a handle, it goes with a small icon that represents the active action.

Transform Tools

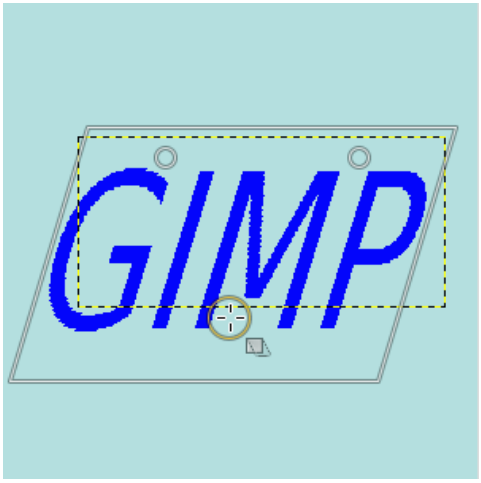
Handle Transform

- Consists of 4 Handles: once click and drag a handle, a transformation is applied.

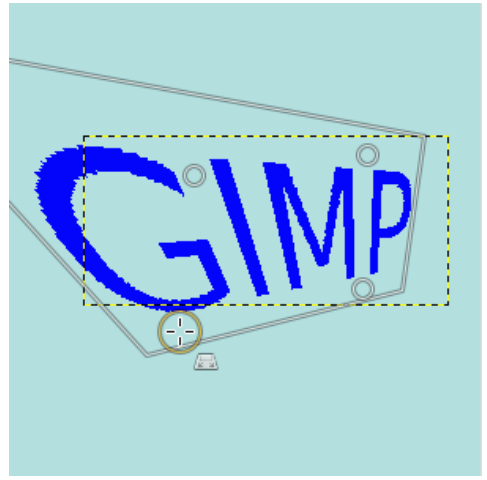


Handle 1: Move

Handle 2: Rotate and Scale



Handle 3: Shear and Scale



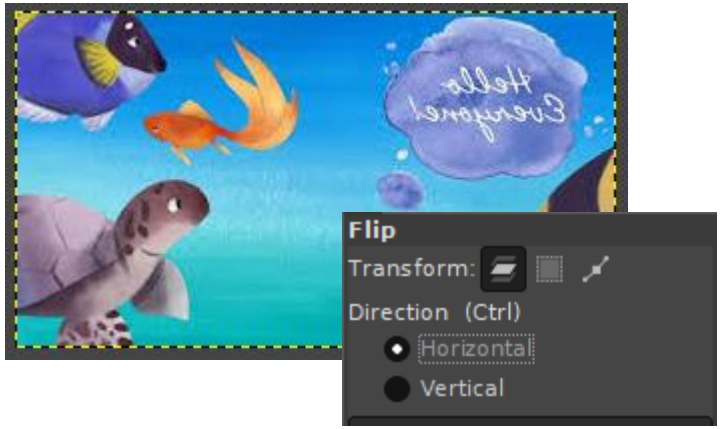
Handle 4: Change perspective and scale

Transform Tools

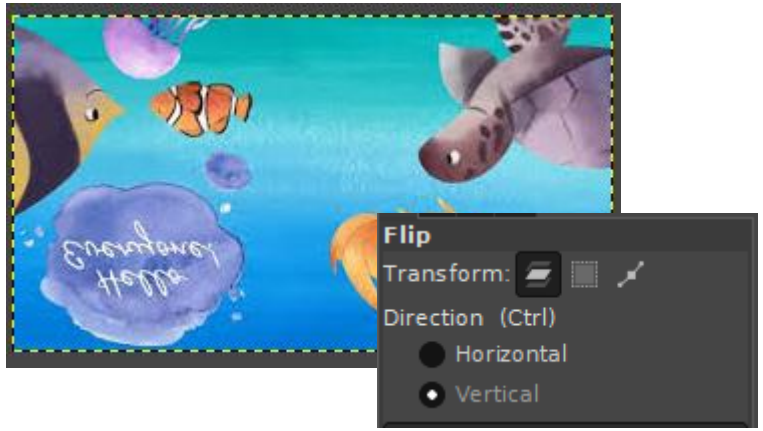
Flip

- Provides the ability to flip layers or selections either horizontally or vertically.

Original



Horizontal Flip



Vertical Flip

Transform Tools

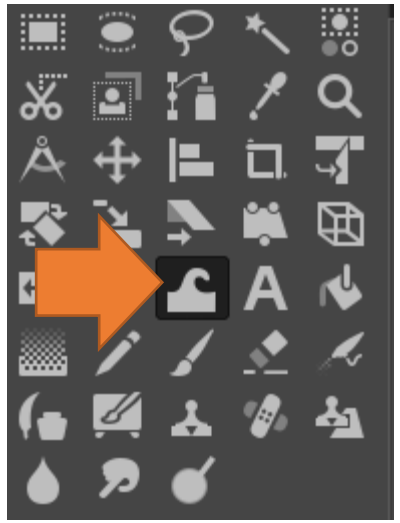
Cage

- A special tool allows to select the transforming area by setting anchor points by free hand drawing
  - similar to Free Selection (Lasso) tool.

The cage area selected

Transformed

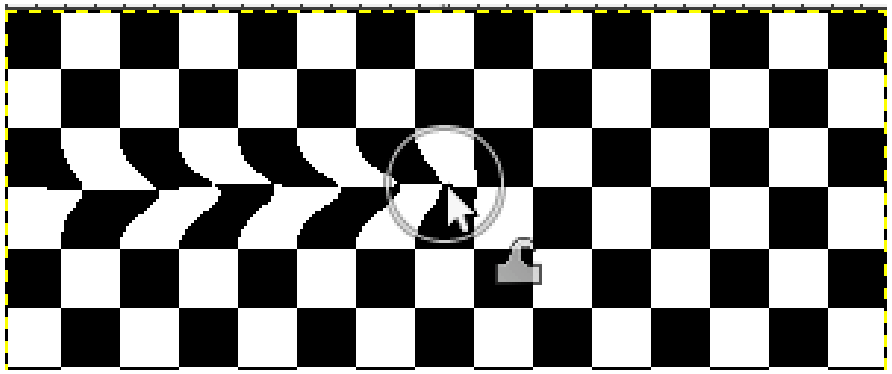
Transform Tools

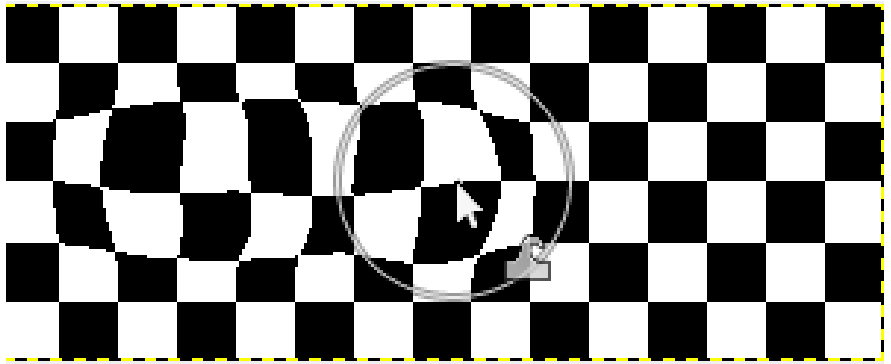


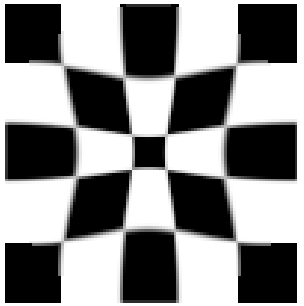
Wrap Transform

- A GEGL (Generic Graphics Library) based brush-like tool which replaces the old iWarp filter and works directly on the image, on real things instead of a tiny preview window.

Examples:







Working with Layers

For more information Refer to Chapter 8: GIMP Manual

https://docs.gimp.org/2.10/en

Introduction to Layers

- Layers are
  - a stack of slides.
  - used to construct an image of several conceptual parts.
  - used to manipulate the image parts without affecting any other part of the image.
  - stacked on top of each other.
- The bottom layer is the background of the image, and
- The components in the foreground of the image come above it.

An image with layers

Layers of the image

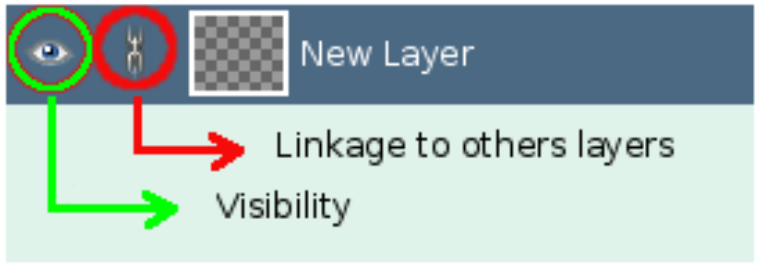
Resulting image

Layer Properties

- **Name**
  - Every layer has a name.
  - This is assigned automatically when the layer is created, but you can change it.
- **Presence or absence of an alpha channel**
  - Alpha channel: encodes information about how transparent a layer is at each pixel.
- **Layer type**
  - Determined by the image type and the presence or absence of an alpha channel.
  - Possible layer types: RGB, RGBA, Gray, GrayA, Indexed, IndexedA

Layer Properties

- **Visibility**
  - Also known as “toggling the visibility” of the layer.
  - Remove/hide a layer from an image, without destroying it.
- **Active layer**
  - Activate a layer, to work on it. To activate
    - click on the layer in the layer list.
    - press Alt and click with Mouse wheel on the element.
- **Linkage to other layers**
  - Group layers on multiple layers.



Red: Linkage to others layers. Green: Visibility.

Layer Properties

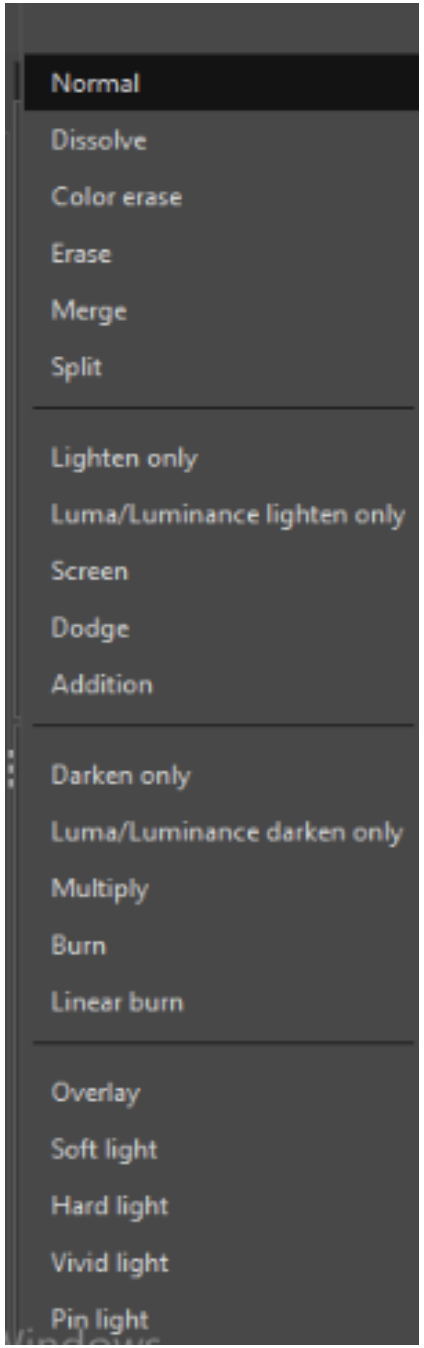
- **Size and boundaries**
  - In the image window, the boundaries of the currently active layer are shown outlined with a black-and-yellow dashed line.
  - The boundaries of a layer do not necessarily match the boundaries of the image that contains it.
  - When you create text, each text item goes into its own separate layer.
  - The layer is precisely sized to contain the text and nothing more.
  - When you create a new layer using cut-and-paste, the new layer is sized just large enough to contain the pasted item.

Layer Properties

- **Opacity**
  - Determines the extent to which it lets colors from layers beneath it in the stack show through.
  - Ranges from 0 (complete transparency) to 100 (complete opacity)
- **Mode**
  - Determines how colors from the layer are combined with colors from the underlying layers to produce a visible result.
- **Layer mask**
  - This is another way to control the transparency of a layer: add a layer mask.

Layer Modes

- Also known as “blending modes”.
- Changes the appearance of the layer or image, based on the layer or layers beneath it.
- Layer modes
  - has no effect if there is only one layer.
  - can be applied if there is at least two layers in the image .
- Permit complex color changes in the image.
- e.g.: Normal, Dissolved, Multiply. Dodge…etc.



Creating New Layers

- A new layer can be created using several ways
  - Select Layer → New Layer in the image menu.
  - Select Layer → Duplicate Layer in the image menu.
    - Creates a new layer, that is a perfect copy of the currently active layer.
  - "cut" or "copy" and then paste it using **Ctrl**+**V** or Edit → Paste
    - creates a "floating selection", a sort of temporary layer.
    - need to anchor the floating selection to an existing layer, or convert it into a normal layer.

Layer Groups

- Group layers that have similarities in a tree-like way.
- The layer list becomes easier to manage.
- One can
  - **Create a layer group**
  - **Add layers to a layer group**
  - **Make a layer group visible or invisible**
  - **Raise and Lower Layer Groups**
  - **Duplicate a Layer Group**
  - **Move, Delete, Embed Layer Groups …etc.**

Enhancing Photographs

For more information Refer to Chapter 10: GIMP Manual

https://docs.gimp.org/2.10/en

Introduction

- GIMP can be used to fix imperfect digital camera images that are
  - overexposed
  - underexposed
  - rotated a bit
  - out of focus
- By cleaning an imperfect photo, one can
  - improve the composition;
  - improve the colors;
  - improve the sharpness; and
  - remove artifacts or other undesirable elements of the image.

Improving the Composition

- The composition can be improved using
  - Rotate: Rotating the image
  - Crop: Crop the image

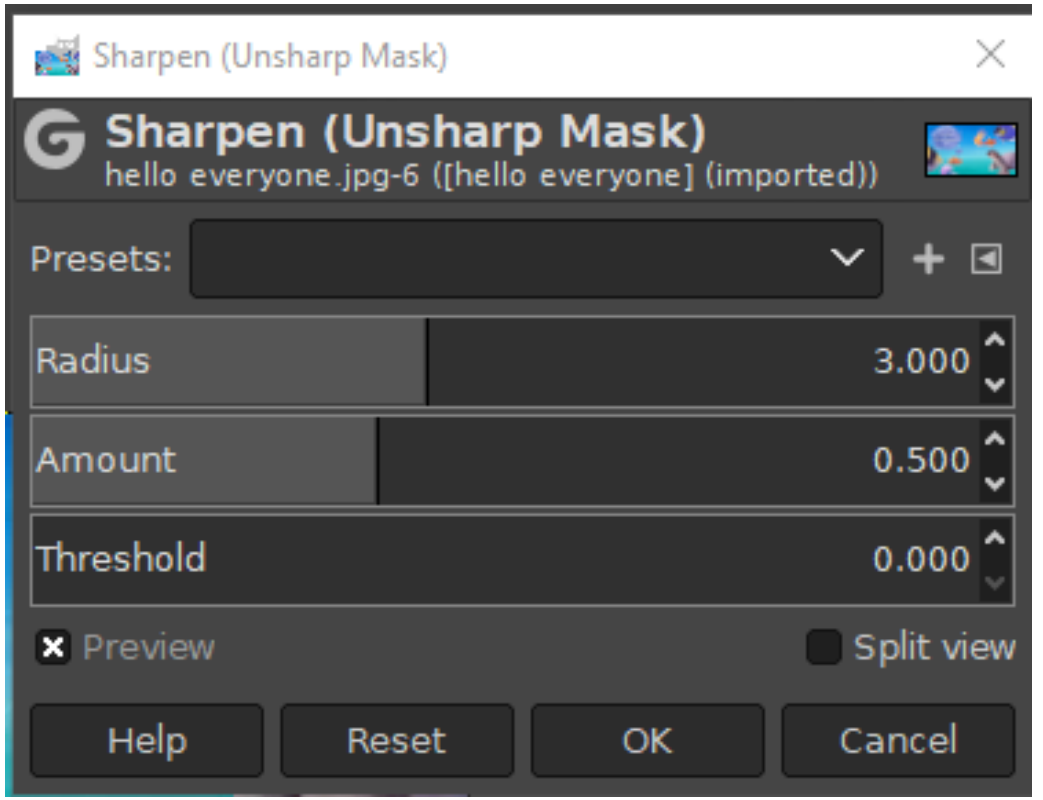
Improving Colors

- Images due to over- or under-exposed, or with color casts (imperfections in lighting) can be corrected using automated tools
  - **Normalize:** adjusts the whole image uniformly until the brightest point is right at the saturation limit, and the darkest point is black.
  - **Equalize:** spread the colors in the image evenly across the range of possible intensities
  - **Color Enhance:** increases the saturation range of the colors in the layer, without altering brightness or hue.
  - **Stretch Contrast:** operates on the red, green, and blue channels independently
  - **Stretch HSV:** Same as Stretch Contrast but works in HSV color space, rather than RGB color space, preserves the Hue.
  - **White balance:** Enhance images with poor white or black by removing little used colors and stretch the remaining range as much as possible

Adjusting Sharpness

Unblurring

- Blurred image occurs due to if
  - the focus on the camera is not set perfectly, or
  - the camera is moving when taking the picture.
- Technique for sharpening a fuzzy image
  - Sharpen (Unsharp Mask) from Filters menu ->Enhance
  - Blur or Sharpen from the tool box



Adjusting Sharpness

Reducing Graininess

- Occurs due to
  - low-light conditions or
  - fast exposure time (camera does not get enough data to make good estimates of the true color at each pixel)
- Techniques
  - Selective Blur
  - Despeckle filter.

Softening

- Blur the image
  - Use Filters->Blur->Blur

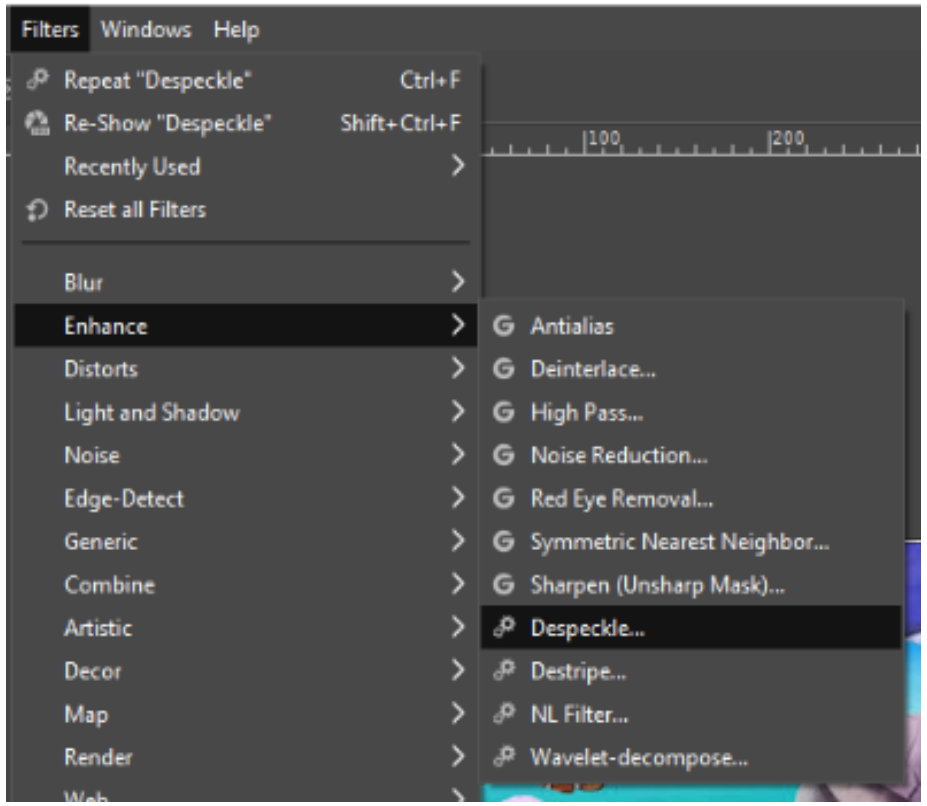
Removing Unwanted Objects from an Image

- There are two kinds of objects to remove from an image:
  - Artifacts caused by junk (e.g. dust or hair on the lens)
  - Things that were really present but impair the quality of the image (e.g. a telephone wire running across the edge of a beautiful mountain landscape)
- Tools
  - Despeckling
  - Garbage Removal
  - Removing Red-eye

Removing Unwanted Objects from an Image

Despeckling

- A good tool for removing dust and other types of lens grunge
- Select Filters->Enhance->Despeckle
- Must begin by making a small selection containing the artifact and a small area around it.
- NOT effective on the whole image
- If you have more than one artifact in the image, necessary to use Despeckle on each individually.

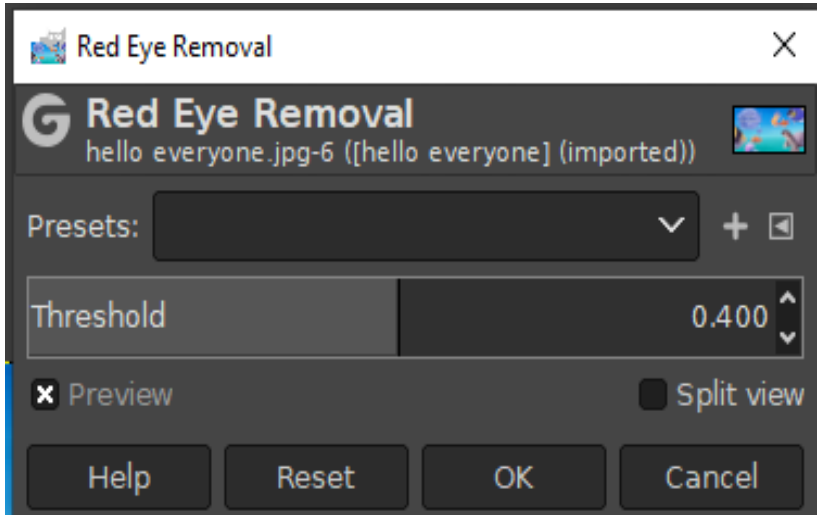


Removing Unwanted Objects from an Image

Garbage Removal

- Clone tool
  - used to remove unwanted “clutter” from an image
  - allows to paint over one part of an image using pixel data taken from another part.
  - to use the clone tool effectively need to find a different part of the image that can be used to “copy over” the unwanted part
  - if the area surrounding the unwanted object is very different from the rest of the image, you won't have much luck.
- Healing tool
  - Remove wrinkles and other minor errors in images.

Removing Unwanted Objects from an Image



Removing Red-eye

- "Red eye" effect
  - occurs when taking a flash picture of somebody who is looking directly toward the camera, the iris of the eye can bounce the light of the flash back toward the camera.
  - makes the eye appear in bright red.
- Many modern cameras have special flash modes to minimize red-eye.
- The same effect occurs with animals, but the eyes may show up as other colors (e.g. green).
- To remove the red-eye, use the remove red eye filter.
  - Make a selection with one of the selection tools of the red part of the eye
  - Then choose the "Remove Red Eye" filter (Filters->Enhance->Red-eye removal)
  - Set the threshold slider to get the right color.

Summary

Following topics were covered during this lecture,

- Introduction to Graphic Design
- Getting Familiarize with the Working Environment
- Working with Images
- Drawing and Painting
- Working with Transformation Tools
- Working with Layers
- Enhancing Photographs

THE END

Free and Open-Source Software for Personal Computing