

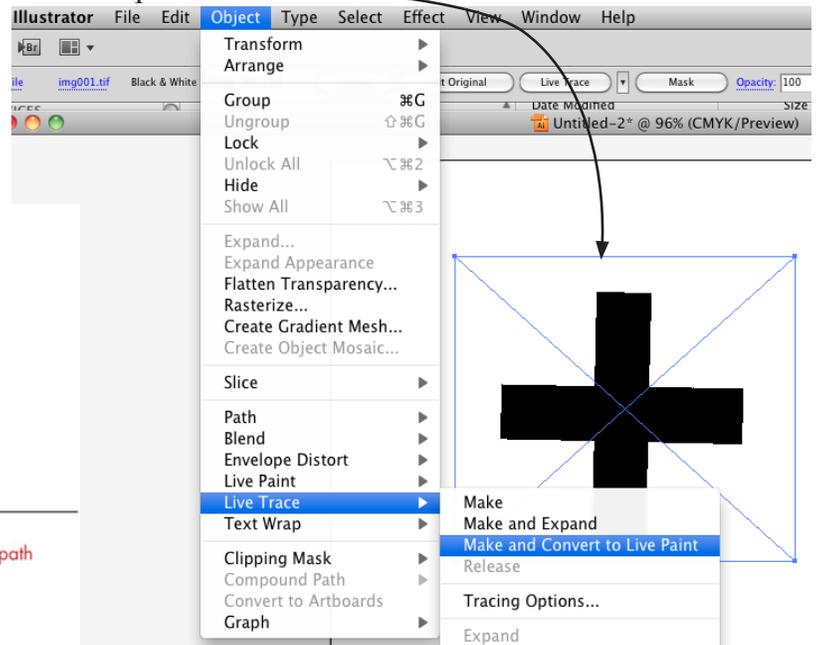
Vectors and vectorizing graphics

Vectorial image formats permit infinite scaling of graphics. How? The contours are described rather than the individual pixels. You can make a circle 1 inch wide or 1 mile wide, it's still the same shape. Curves for fonts or blobs can be described mathematically, too. When making these graphics, we can use a rect tool or a circle tool. Or we can use a 'pen' tool that makes shapes with N verteces. We are then able to manipulate control points around these verteces (if we wish to) in order to smooth the corner into a curve.

Another way of getting vectorial data is to convert from a raster (pixel based) image. We may find such graphics on the Web, or scan it, or even produce it using Processing. But in all cases, we will need to import the graphic into Illustrator to perform the vectorization. We can do this by dragging and dropping the .PNG, .TIFF, or .GIF image onto the open Illustrator document from the Desktop. Note that .JPEG, which is common, is not in that list. That's because JPEG files have unwanted compression distortion that will just cause unwanted noise in our document. It's better to avoid JPEG whenever possible if we are trying to vectorize.

Once the raster graphic is visible in the document window in Illustrator, you will highlight the graphic and go to the menu named 'Object -> Live Trace' and choose the Make and Convert to Live Paint item. The next thing to do is to use the white arrow tool to select and remove the square frame

Drag from an area near one of the four corners over top of the corner, then release the mouse. Now the square border is selected. Then hit the delete key twice. This is helpful to reduce the unneeded framing of the object.



PEN TOOL: Used to draw vector objects
As you move the mouse, click the left button to create anchor points. A straight line will connect each point. Click and drag the mouse to create a curved line.

click to create points. Click and drag to create curves. This will give you handlebars a.k.a. "direction lines"

ADD ANCHOR POINT: Used to add anchor point in a vector path
To add an anchor point, position the tool anywhere along a path and click. Clicking on a straight line will give you a normal anchor point, while a curved line will give you an anchor point with a direction line.

click to add points. Clicking on a curved line will give you a curved anchor point with a direction line.

DELETE ANCHOR POINT: Used to Delete anchor point in a vector path
Click on an existing anchor point to delete it. Deleting a point does not break the line.

click to delete points. When you delete a point, the line will go to the next anchor point.

CONVERT ANCHOR POINT: Used to convert straight line to curves
Click and drag an existing anchor point to convert it to a curve. As you drag you will see the direction line appear. The direction lines control the shape and size of the curve.

click and drag on a straight line point to create a curve. Clicking on a curved line point will remove the direction line.

Once you have done this you will be able to use the pen tools to manipulate the curves. These are described to the left.

When preparing graphics for vectorization, you will want to avoid shades of gray or color in most cases. It is possible to vectorize colors and shades, but the effect tends to be harder to control than working with black and white. You will generally want to use graphics that has a resolution near 150 dpi (dots per inch). This can be configured into your scanner software when you are scanning.