Vectoring Graphics

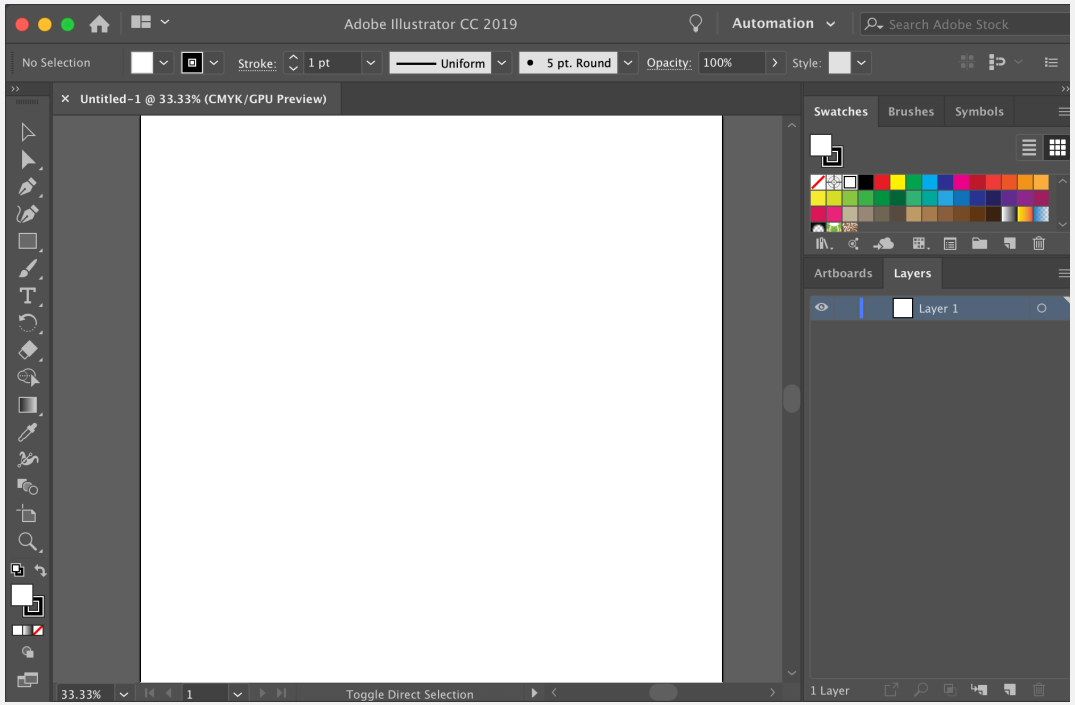
- The Basics of Illustrator
- Introduction to Vectoring
- Advanced Motion Graphics

Adobe Illustrator

Illustrator is a vector graphics editor for making illustrations, diagrams, assets, and much more for prints, photos, and even animation.

> Assets in Illustrator can be **directly imported** into After Effects without any exporting from Illustrator.

Much of Illustrator's functionality can be **replicated** in After Effects, Flash Professional, & Photoshop already. The software interface simply makes it **easier** to **create**, **edit**, and **export** graphics than in any other software.



Illustrator Interface

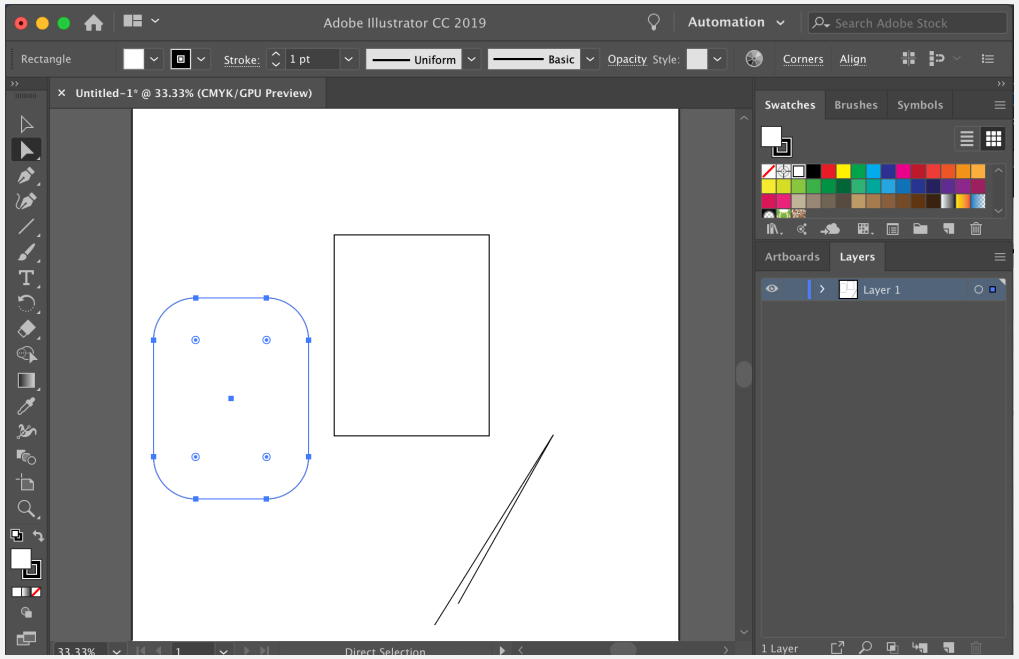
Functionality

Vector Drawing places points and allows tangents to be edited in order to create vector graphics

> Drawing comes in two flavors: **pencil** and **pen**. The pen allows you to place the points while pencil allows you to draw the shape and automatically converts the shape to a vector representable of the original shape.

Type Tool allows placement of text with customizable attributes such as spacing, line height, thickness, shadows, 3D text, and more. This attribute shares the same **Adobe Fonts** as all other program.

Shape Generator generates different primitives with modifiable attributes such as keyframe positions and tangent direction & strength. The curvature of keyframes can also be modified directly from newly created primitives.



Illustrator Vectoring

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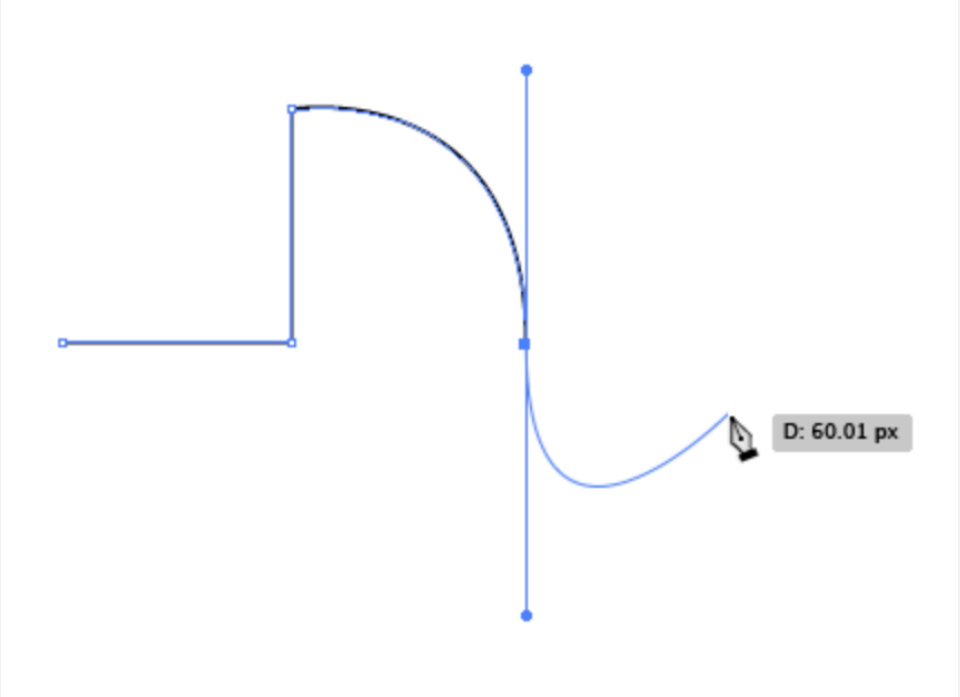
Review: What Is A Vector?

Vectors can be broken down into a set of piecewise cubic polynomials with 4 degrees of freedom: 2 keyframes & 2 tangents.

Tangents have different levels of continuity.

C0 continuity – keyframes are continuous
C1 continuity – first derivative is continuous
C2 continuity – second derivative is continuous

Pen Tool allows us to place keyframes by clicking, and modify the tangents by dragging the cursor after clicking. By **default**, the tangents will exhibit **C1** continuity, yet the tangents can be modified separately on each side to break this continuity.



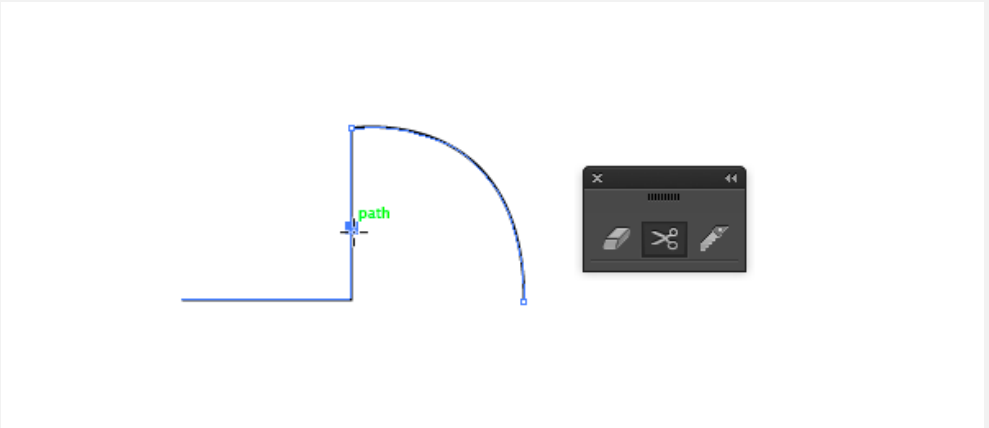
Vectoring Techniques

Use a **drawing** or **rough sketch** as **reference**. Something that captures the basic **form** and **shape** is sufficient enough. Free-hand vectoring is a very messy and inaccurate practice, so always go in with reference.

Start with a **few keyframes** to represent the basic shapes. The fewer the keyframes, the more editable the vector. You can always go back in and add more keyframes if needed.

Stroke **thickness** can be modified anywhere on the vector, even portions without keyframes.

Thickness interpolation is also cubic.



Coloring Techniques

Vector fills can be **solid** colors, **linear** gradients, **radial** gradients, or **patterns**.

Linear gradients are color transition represented by a line segment. A pixel's color is calculated by finding the point on the line segment closest to it, and extracting the color value at that point of that line segment.

Radial gradients are color transition represented by a disk. It can be thought of infinitely many linear gradients around an inner and outer color space.

The **interpolation** of gradients is defaulted as **linear** but can be **customized**.

Patterns are a 2D repeater of an object or vector masked out to fit in the vector. Can be thought of as a bed cover with the same image printed on it in a grid-like fashion.

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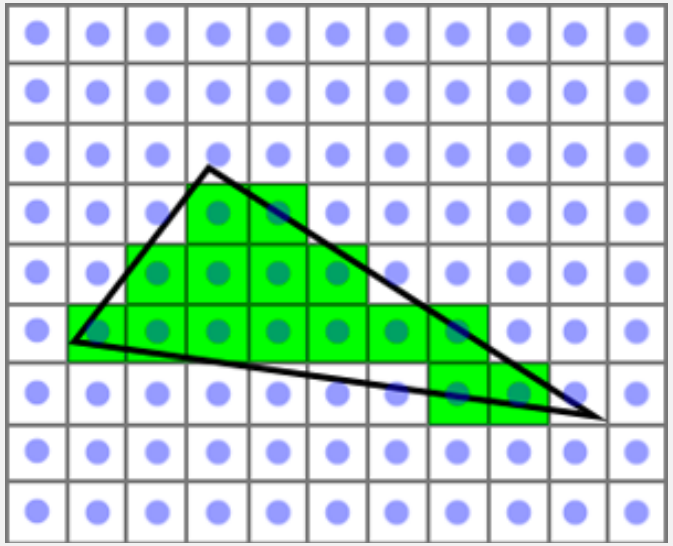
Importing Vectors

Vectors can be created in **Illustrator** and imported directly into **After Effects**.

Imported vectors do not maintain editability. They no longer are represented as a combination of piecewise cubic polynomials, but instead are **rasterized**.

Rasterization is the process of saving image data to a **pixel buffer**. Rasterized data is not infinitely scalable and **exhibits aliasing artifa**cts when scaled up too high.

Rasterization is favored in post-processing since it is **faster** for the **render buffer** to load and work with.

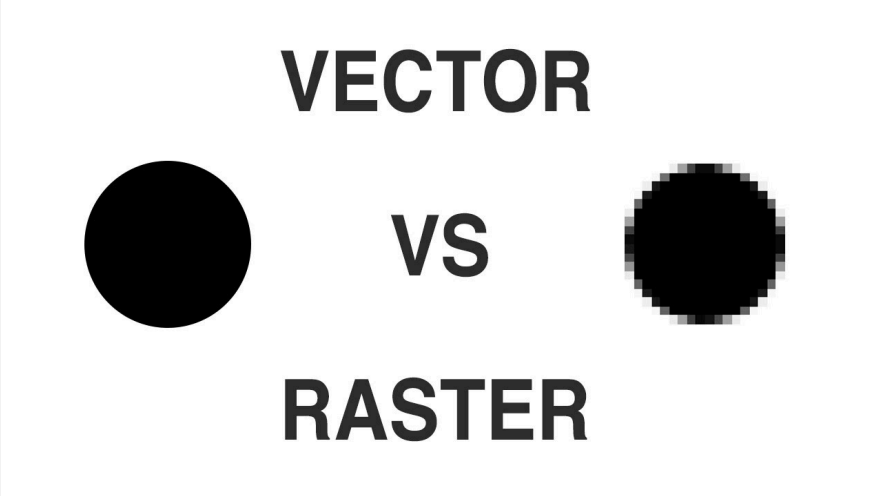


Motion Graphics With Vectors

Imported Vectors are treated as regular **solids**. Any **effects** and **transformations** that can be applied to a regular solid can be applied to imported vectors.

After Effects also contains the ability to draw vectors in the software itself. Vectors already imported can be extended with additional components using After Effect's pen tool.

> Users can draw an additional vector in After Effects and **parent** it to the original imported vector to treat it as one complete vector.
>
> > The vector drawn in After Effects will still be represented as keyframes and tangents and can be **infinitely scaled** without any artifacts.



Homework

- ❑ Create a set of custom vectors in Illustrator using the pen tool. You may use any references found online to assist you.
- ❑ Import the vectors into After Effects as assets and create a scene out of them.
- ❑ Render as H.264 and upload to course Drive.

Questions?

Live Demo