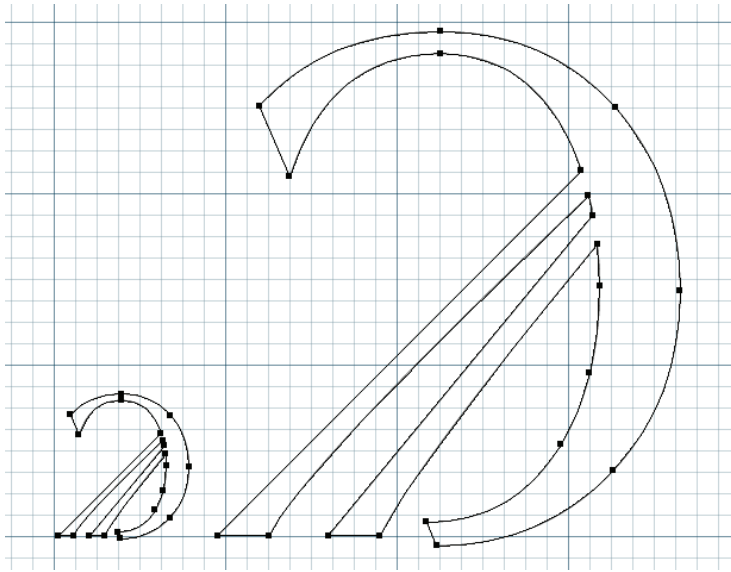# VECTOR GRAPHICS: Why are they so cool?

Vector graphics are digital images that are based on paths (vectors). These paths travel through control points (nodes). How the paths behave between these points are described by mathematical expressions.

When you scale a vector graphic up or down, you are changing the distance between the control points. The behavior of the paths remains uniform in relation to the scale. This is because the rendering software recalculates the expression/function representing the path with the new scale input you have given it.

The image to the left shows a resized vector. The small squares are the control points. These points are farther apart in the larger version, but the paths retain their shape in proportion to the new scale, rather than being stretched.

Vector graphics are ideal for 2D designs because they can be rescaled so easily without any loss of quality. A vector graphic, like a business logo can be scaled down to the size of a business card or scaled up to the size of a billboard, without losing any image quality. If you were to try to do the same with a jpeg file, you would have a pixelated mess.

Original                    Rescaled as a vector                    Rescaled as a jpeg