Vector Graphics vs. Raster Images

Word processors and spreadsheet or presentation applications, although suitable for creating files for office or Internet use, are not recommended for creating digital art for print.

Here are 2 examples of an image when magnified or scaled up. You will notice the difference in clarity. The mascot below was designed by Logo Design Works for a client.

Vector Graphics

Vector Graphics typically are generated using drawing or illustration programs (e.g., Adobe Illustrator) and are composed of mathematically-defined geometric shapes—lines, objects and fills. Since vectors entail both magnitude and direction, vector elements thus are comprised of line segments whose length represents magnitude and whose orientation in space represents direction.

Vector graphics usually are easily modified within the creating application and generally are not affected detrimentally by scaling (enlarging or reducing their size). **Because vector elements are mathematically-defined, scaling simply requires modification of their mathematical locations.** However, vector files do not support photographic imagery well and often can be problematic for cross-platform exchange. Vector graphics typically are saved as EPS format.

Raster Graphics

Raster Images are produced by digital image capture devices: digital scanners or digital cameras, or by pixel editing programs (e.g., Adobe Photoshop). Raster images are composed of a matrix (grid) or bitmap of digital picture elements (pixels). Pixels are squares or rectangles described as black, white, gray or color. Raster images typically are saved as TIFF format, but can be saved as EPS as well.

Whereas conversion from vector to raster is easily accomplished, raster conversion to vector is much more difficult (and often is not possible). Raster images typically are easily shared across various platforms, but can be more difficult than vector graphics to modify. As well, raster graphics are impacted by scaling.

Vector Graphics vs. Raster Graphics...There Is A Difference?

"What in the world do those words mean, and more importantly, are they English?" Well, for all those who are wondering, yes, they are English. I would just like to give you my personal definitions for the two words to maybe help you understand.

A **Vector image** is a geometric shape (or series of shapes) made up of lines connected by points. Have I lost you yet? These clean edged shapes can be easily created, manipulated, selected, moved and re-sized with software such as Adobe Illustrator and **InDesign**, Macromedia Freehand, and CorelDRAW (I don't recommend CorelDRAW by the way). Vector graphics have smaller file sizes and most importantly will print at the highest dpi (dots per inch…basically the same as ppi which is pixels per inch) of which your printer or press is capable. And if you care, vector graphics are all the rage now days (if you haven't noticed). There is serious warfare going on between creatives over who can create the most realistic image using only shapes and lines.

Raster graphics are very different. A raster image is not based on shapes, lines and scary math stuff, but rather pixels or bits. Therefore, **raster** is synonymous with **bit-mapped**. These images are dependent on their resolution (dpi) and can be easily created with software similar to Adobe Photoshop (I recommend Photoshop CS3). However, these images cannot be re-sized or manipulated as easily as vector images and will appear more pixilated or out of focus if blown up too much. Increasing the dpi of an already low-resolution image will not, may I repeat...will not make the image sharper. The key is to start out with a high-resolution document and build your astounding design from there. With raster graphics, the better the quality, the larger the file size and visa versa. They will also be printed at whatever dpi is selected. (300 dpi or more is recommended for good print quality...but I set my raster graphics at 600 dpi just to be safe). If you want to know more about either of these terms just Google Vector or Raster Graphics and see what you find.