RASTER vs. VECTOR

When using graphics programs to set-up your files, it is extremely important to understand the difference between a raster file and a vector file.
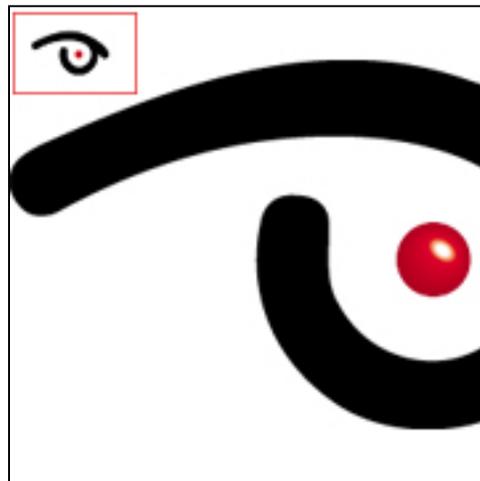
RASTER
- **Defined by pixels**
- **Non-scaleable**
- **Resolution dependent**
- **Continuous tone, photographic qualities**
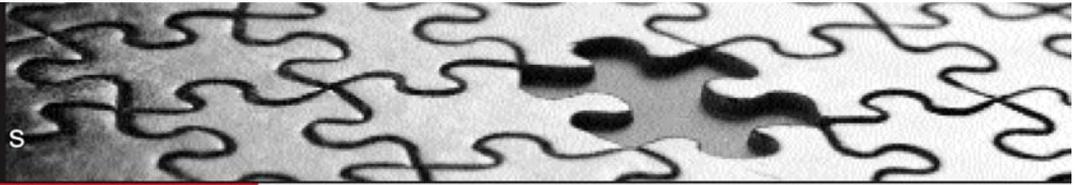- **Always use for photos**

VECTOR
- **Defined by mathematical equations(lines & curves)**
- **Scaleable to any size**
- **Independent of resolution**
- **Cartoon-like, line drawing qualities**
- **Always use for logos, text**
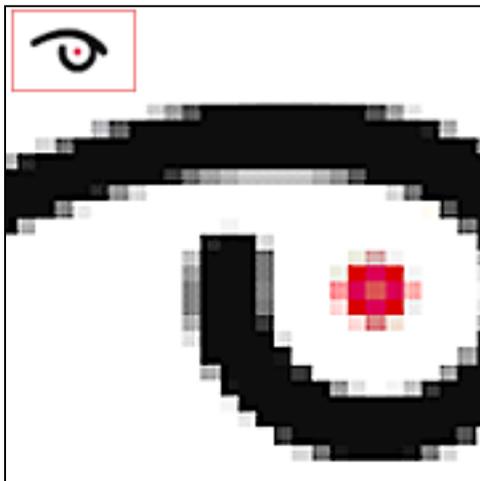
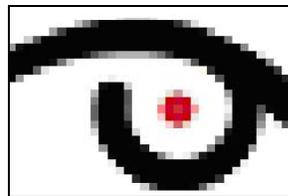**RASTER** FILE ENLARGED   **VECTOR** FILE ENLARGED

RASTER FILES

Rasters are made up of pixels. Each of these tiny square dots represents a color. The dots combine into patterns to make up an image. A raster program defines which pixel will be which color and what the dimensions of the image should be.

Rasters are dependant on resolution. Resolution is the term for the amount of pixels contained within a file, often referred to as DPI(Dots Per Inch).

To increase the size of a bitmap the pixels must be either stretched, often resulting in visible pixels and "jaggies", or interpolated, often resulting in a blurred image. When a graphics program interpolates it creates new pixels, estimating their color value using the existing pixel information.
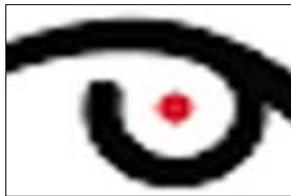
INTERPOLATION- BLUR   **STRETCHED-"JAGGIES"**

Size changes can greatly affect the quality of your final print. It is important to remember that your monitor display is often set to a different resolution than your final output. By following the Bokland DPI recommendations and viewing your file at final print size, you can avoid potential resolution problems.

Raster files are limited to rectangular shapes. Though it may be transparent, the elements of your image will always be contained within a rectangle. Transparent backgrounds are allowed in a programs native file format, and in GIFs and PNGs. Be aware that a file may loose transparent background qualities when converted to another format or used in another program.

Any image that is scanned or comes from a digital camera is a raster.

VECTOR & COMPOSITE FILES

VECTOR FILES

Vector files are made up of lines, curves and shapes, with editable attributes such as color, fill, and outline. A vector graphics program creates a series of mathematical equations that dictate a line's direction, thickness, and color.

Vector files are very small, they do not need to account for each pixel, and they can be resized to any proportion. Regardless of file size, lines and edges will be crisp and sharp. Unlike rasters, vectors are not restricted to rectangles and do not carry an inherent background. They can take on any shape and easily be placed on top of other elements.

Vectors are ideal for creating logos, illustrations and precise typographics. Vector images primarily originate from graphics programs. You cannot scan an image or save it as a vector file without using special software. You can however, easily convert a vector to a raster. Most vector programs offer rasterization options. If you open a vector file in a raster program such as Adobe Photoshop, it will automatically be rasterized.

COMPOSITE FILES

Composite files contain both raster and vector information. For example: a Quark document with an Illustrator logo and a .TIFF image.

When working with metafiles stay organized. Keep track of sizing. Make sure any raster files you use contain enough data for the final print size. Remember that rasters are rectangular, check that they do not display an undesired background. Do not open your vector files in raster programs unless you want them to be rasterized. Include a folder with all the pieces used to make up your composite, including fonts.

A COMPOSITE FILE ILLUSTRATED
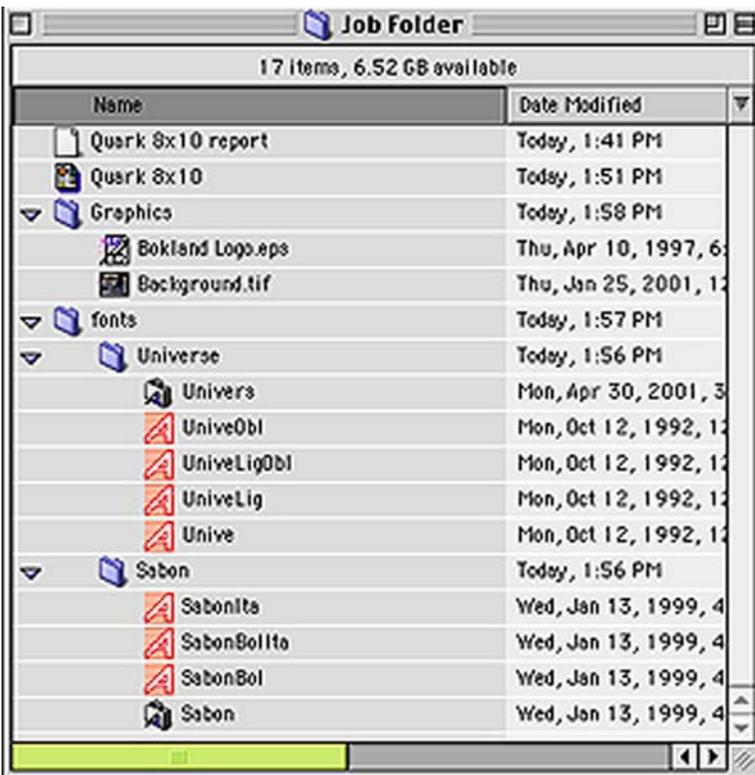
This is a Mac screen capture of a folder containing the composite file pictured below. The file features vector and raster elements.
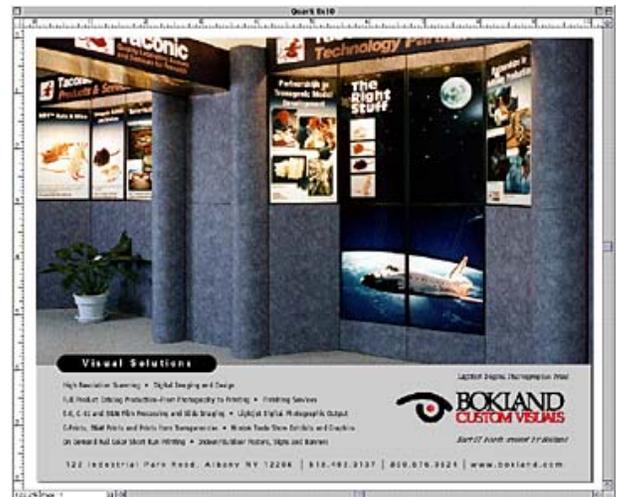
We used our recommended combination of Adobe Photoshop, Adobe Illustrator, and Quark to create this file.

Note that all of the fonts used are contained in subfolders. The raster files (the .tif image and .eps image) are also contained in a subfolder. Follow this model when submitting a Composite file.

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