

## INTRODUCTION TO SCREENING

A given spot on a page of a printed document either has ink or no ink; printing does not deal directly in shades of gray. Therefore photographs or other material containing gray shades must be converted to spots of pure black or pure white.

The usual method of doing this is called screening. Screening essentially simulates shades of gray by converting light grays to tiny black dots on a white background while dark grays are represented by tiny white dots on a black background. Because of the optical characteristics of human eyesight, these dots, or in the case of more sophisticated screens-- configurations of dots, appear as various shades of continuous gray to the viewer.

A photograph, after being screened, is known as a halftone. If you look at a halftone in a newspaper or magazine under a magnifying glass, it consists of a regular grid of dots. The grid is made fine enough so that the individual dots are inconspicuous to the eye. If an area in the photo is 90% black, the halftone would be a white spot occupying 10% of its grid cell, the rest of the cell being black. If another area in the photo is 50% black, its halftone representation would be half black and half white in each cell. Magnified, this appears as a checkerboard, but to the eye, it just looks 50% white. Even though the eye will not see individual dots in the halftone, it will perceive their average brightness, or "gray value", over a small area.

The quality of a halftone image is dependent upon the fineness of the grid of dots and the number of possible dot shapes for each dot.

The printing industry measures the grid of dots in terms of screen ruling. Screen ruling is equivalent to dots per inch but it is specified also in lines-per-inch (lpi). Screened photographs (halftones) you see in your newspaper are typically 85 lpi, while halftones in magazines are typically 150 lpi. The lpi used by the printing industry is dependent upon paper type used for printing and capability of the printing presses used. In use for many years, halftone technology is highly developed. Andromeda's Series 3 Screens Filter provides a special effects digital halftoning with variations in screen value, screen angle and spot shape.